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PRELIMINARY REPORT OF A METHOD OF INTERNAL FIXATION OF TRANSCERVICAL FRACTURES OF THE NECK OF THE FEMUR IN THE AGED.

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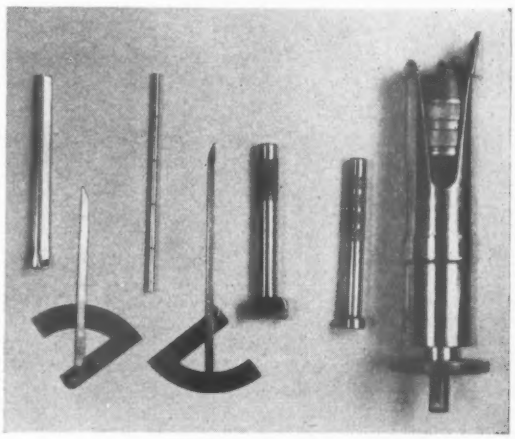
In December, 1931, it was my misfortune to see four women with fractured hips who were between the ages of 72 and 88 years. The high morbidity and mortality incident to this type of fracture with the present method of treatment was so forcibly realized while I was trying to care for these aged individuals that a new method of fixation was sought which would allow early activity and good functional results without a major surgical procedure.

The method herein described for the internal fixation of recent fractures of the neck of the femur recommends itself for the following reasons:

1. Closed reduction is accomplished by the Whitman method.
2. Only a small superficial incision is necessary.
3. The surgical procedure totals six to ten minutes.
4. No added support is necessary; avoiding the use of plasters or splints.
5. The patient may walk immediately with the use of crutches.

The open operation for the reduction and internal fixation of transcervical fractures of the femur constitutes a major surgical procedure. It has been reserved for the cases of non-union after they have been treated by the more conservative methods of reduction and external fixation. The Albee and the Smith-Petersen open reduction and internal fixation operations are among the most noteworthy. They are major surgical procedures, largely because of the open reduction. The Albee method employs the bone peg as the instrument of fixation, while the Smith-Petersen method employs the bladed stainless steel pin, first described by him. The pin used by Dr. Smith-Petersen in his open operation is employed in the following cases to eliminate the necessity of external fixation and allow immediate activity.

The internal fixation operation, herein described, is recommended for use in recent transcervical fractures of the femur following reduction by the Whitman method, and differs from the operations of either Dr. Albee or Dr. Smith-Petersen, in that no exposure of the hip joint is necessary, thereby eliminating the shock of a major surgical procedure.



Instruments devised for the internal fixation of recent fractures of the neck of the femur. Pin extractor; pin driver; impactor; roentgenogram protractor; measuring rod; bone protractor; pin.

The first two cases were operated upon with roentgenograms as a guide to the angle of entrance of the pin. While Case 1 was eminently successful, Case 2 proved the interpretation of wet roentgenograms was not entirely dependable. Experimental studies were then made on cadavers to determine the true angulation of the neck of the femur in both planes. This was proved possible by rotating the normal femur to determine the angle of torsion or ante-

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version. Then with roentgen rays centered over the hip and with anteversion corrected, the true angulation and length of the neck of the femur was determined.

In Case 3 the anteversion, angulation and length of the neck of the normal femur was determined before operation. After reduction, the course of the pin was determined by using occasional roentgenograms as an adjunct. Three factors helped to guide the course of the pin: Known angulation, sensation during entrance, and occasional roentgenograms. The same factors would also guide the bit of the Albee motor or of the hand drill.

Case 1, Mr. J. T., a farmer, age 52, received a fall, February 18, 1932, and fractured the neck of the left femur. He rode 150 miles to the hospital with the left leg in a Thomas splint with intrinsic traction. The roentgenogram showed a transcervical fracture of the neck of the left femur with external rotation of the distal fragment. He was placed in a twenty-pound Buck's extension for thirty-six hours. His general condition would neither

Fig. 1.—Case No. 1. Fractured neck of the femur; (A) Before reduction; (B) After reduction.

Fig. 2.—Case No. 1. Fractured neck of the femur after reduction; (C) and (D) showing progress of pin.

justify the use of the Whitman cast nor the Albee or Smith-Petersen method of internal fixation. On February 20, 1932, forty-eight hours after the injury, the patient was taken to the operating room. A portable X-ray machine was centered over the left hip with a plate changer or tunnel under the hip. Pre-operative roentgenograms were made to allow the study of the position of the fragments. Nembutal, 3½ grs., was administered intravenously, producing light sleep. Nitrous oxide gas then gave sufficient relaxation and the fractured hip was reduced. The anesthetic was discontinued while stereoscopic roentgenograms could be made for the question of the position of the fragments. The skin area was prepared for operation with an assistant maintaining the position of the hip. The anesthetic was resumed and a small three-inch incision was made over and below the trochanter. One inch below the vasturnus line a hole was made into the shaft of the femur and a stainless steel flanged pin was driven through the neck of the femur to engage the proximal fragment. The course of the pin was checked repeatedly by stereoscopic roentgenograms. The anesthetic was discontinued for the making, developing and reading of the plates. The wound was closed and the patient was returned to bed with no signs of shock. Four pounds of traction was applied to prevent flexion, but was found unnecessary and it was discontinued. A back rest was allowed on the second day and he was discharged from the hospital on the fifth day. Word was received on the fifth week that he was walking without crutches. He was advised to resume the use of crutches until further notice. Stereoscopic roentgenograms, seven weeks from the date of the operation, showed good position of the fragments and normal callus formation, with a range of motion in flexion, extension, abduction, adduction, internal and external rotation equal to the normal hip.

Case 2, Mrs. C. B. S., age 82, received a fracture of the neck of the left femur in December, 1931. Her general condition was extremely poor and she was irrational the first three weeks. A Buck's extension was applied but was removed after a few weeks because of irritability. Her general condition showed gradual improvement in spite of spasm of hip muscles occasioned by any motion in bed. March 24, 1932, her condition was thought to justify the same operation as was employed in Case 1 and she was admitted to the hospital. On March 26th, three months after her injury, the operation was performed. Pre-operative

Fig. 3.—Case No. 1. Fractured neck of the femur after reduction; (E) With pin inserted; (F) Seven weeks after operation.

roentgenograms showed external rotation and over-riding of the distal fragment with marked absorption of the neck of the femur. One and one-half grs. of nembutal produced light sleep and relaxation was induced by nitrous oxide gas. The fracture was reduced and checked by the X-ray which showed good reduction but marked absorption of the bone. The same method was employed as in Case 1 in inserting the pin. The pin had been inserted about two inches when abnormal resistance was encountered. Wet roentgenograms suggested an anterior angulation. The pin was extracted and reset with a feeling of greater resistance than was first experienced and by roentgenograms it was then found to be posterior. The head of the pin was pulled off when attempting to change its position, so the nail was driven in to engage a small part of the head and rest on the posterior rim of the acetabulum. The X-ray showed good position of the fragments, but the motions of the hip were restricted to a few degrees. The patient was returned to bed in good condition without signs of shock and she was discharged from the hospital on the fifth day, able to be propped up and to roll around in bed and to enjoy the use of a wheel chair. Six weeks from the date of operation, she continued to be very comfortable.

Fig. 4.—Case No. 2. Fractured neck of the femur of four months' duration; (A) Before reduction; (B) After reduction showing the bone absorption of the neck of the femur.

Improper application of the pin in the second case was the result of having to rely too much on the reading of wet roentgenograms, and, second, to the lack of a pin extractor. After the pin had been advanced far enough for its abnormal course to be determined by the reading of wet roentgenograms, it had entered the bony cortex of the neck of the femur and no available instrument could sufficiently grasp the blades to allow enough traction for extraction of the pin. The pin, considered slightly anterior in the first wet

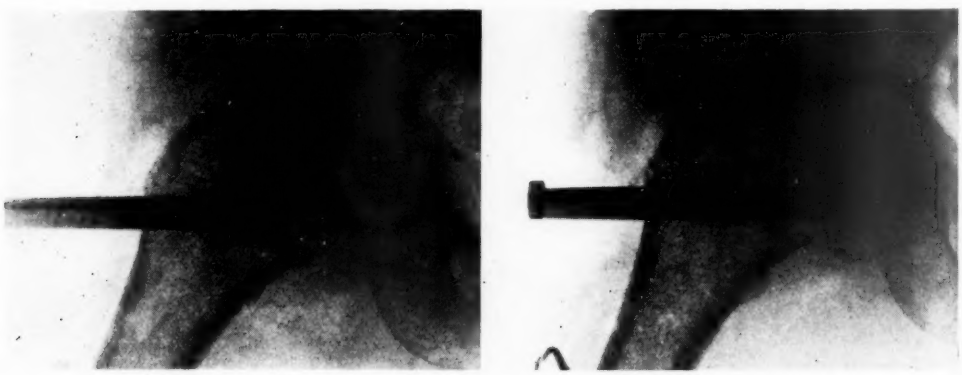

Fig. 5.—Case No. 2. Fractured neck of the femur after reduction; (C) and (D) showing progress of pin.

negative, was found on examining the same negative after drying, to be posterior. The incorrect reading, therefore, resulted in added posterior displacement of the angulation of the pin.

It was decided to work out as far as possible, before an operation, the angulation of the neck of the normal femur in the two planes, i. e., as to the angle of torsion or anteversion of the neck in respect to the lower condyles of the femur and the angulation of the neck in respect to the shaft of the femur. The torsion or anteversion was determined with the patient in bed and the tube of a portable X-ray machine placed on the opposite side of the normal hip, with the rays making an acute angle with the pelvis. With a series of negatives placed external to the hip, and perpendicular to the rays of the machine, the hip was rotated through an arc with a negative made at each three to five degrees of rotation. The degree of rotation was imprinted with lead numbers on each negative, the numbers signifying the angle in degrees made between the imaginary line through the lower condyles of the femur with the line of rays from the tube. Roentgenograms showing the head of the femur superimposed on the trochanter gave the true angle of torsion or anteversion of the femur. The angle of the neck with the shaft of the femur was determined by internally rotating the femur, correcting the angle of anteversion and making negatives parallel to the neck of the femur. A graduated steel rod, parallel with the neck of the femur and equidistant from the plate, gave the true length of the neck of the femur and the length of the pin necessary to transfix the fragments. After reduction of the transcervical fracture and correction of anteversion or torsion of the neck by internal rotation of the femur, a sterile protractor of the type used for determining the angulation of the neck of the femur on the roentgenogram was placed against the shaft of the femur parallel with the horizon, and the course of the pin directed accordingly. The above procedure was tested and proven in the dissecting hall.

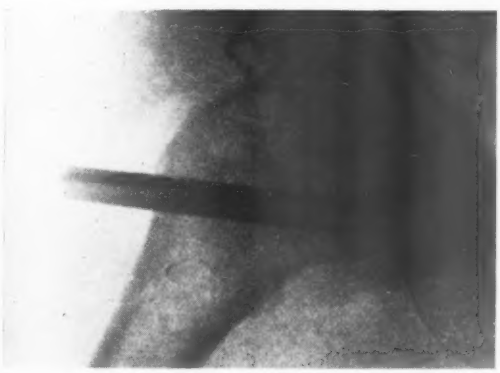

Fig. 6.—Case No. 2. Fractured neck of the femur with pin inserted. Note that head has been pulled from pin.

The necessity of a mechanical pin extractor was realized in Case 2 and such an instrument has been made that will grasp either the pin head or the blades, should the pin head become loosened. The latter is unlikely to again occur as the pins are now being machined with heads en bloc. The extractor exerts counter-pressure against the shaft of the femur during the extraction of the pin, thereby preventing the disruption of the fragments.

Case 3, Mr. F. P. F., age 59, received a transcervical fracture of the neck of the right femur April 23, 1932. He was admitted to the hospital and does not remember having fallen. His general condition was extremely poor. While in bed, the angle of torsion of the normal femur was determined by the method as noted above, and found to be 15 degrees. On May 3rd, ten days after the accident, he was taken to the operating room. A portable X-ray machine was centered over the fractured hip and the distal fragment was found to be externally rotated and displaced upward for one-half inch. Nembutal, 2½ grs., was administered intravenously and followed by a fall in systolic blood pressure of from 180 to 110 m.m. The nembutal was discontinued although there was no hypnosis. Nitrous oxide gas was administered and an attempt was made to reduce the fracture. The anesthetic was discontinued and roentgenograms were made with the condyles of the femur internally rotated 15 degrees. The stereoscopic roentgenograms showed fairly good reduction of the transcervical fracture of the neck of the femur. In the meantime, the skin was prepared for operation. Nitrous oxide gas was resumed and an incision was made over the trochanter. A small opening was made in the cortex of the bone. A protractor on the X-ray plate showed the angle of the neck in its relation to the external border of the femur to be 126 degrees. A sterile protractor was placed against the cortex and the pin was inserted at

126 degrees angulation with the shaft and parallel with the horizon. Nitrous oxide gas was discontinued and roentgenograms were made showing the pin to be slightly posterior. The assistant was then found to be holding the transfix the fragments. The wound was closed and the patient was returned to bed with no symptoms of shock from the operation. The patient reacted immediately and was able to actively move the hip, complaining of no

Fig. 7.—Case No. 3. Fractured neck of the femur ten days after injury; (A) Before reduction; (B) After reduction.

femur with 10 degrees correction of torsion or anteversion instead of maintaining the full 15 degrees necessary for correction of the anteversion. The extractor was used and the pin was partially withdrawn and started anteriorly. The pin was then driven far enough to discomfort except in the region of the incision over the greater trochanter. Twelve hours after the insertion of the pin, against orders, the patient walked around the ward. A roentgenogram on the following day showed a slight bending of the pin but the position of the

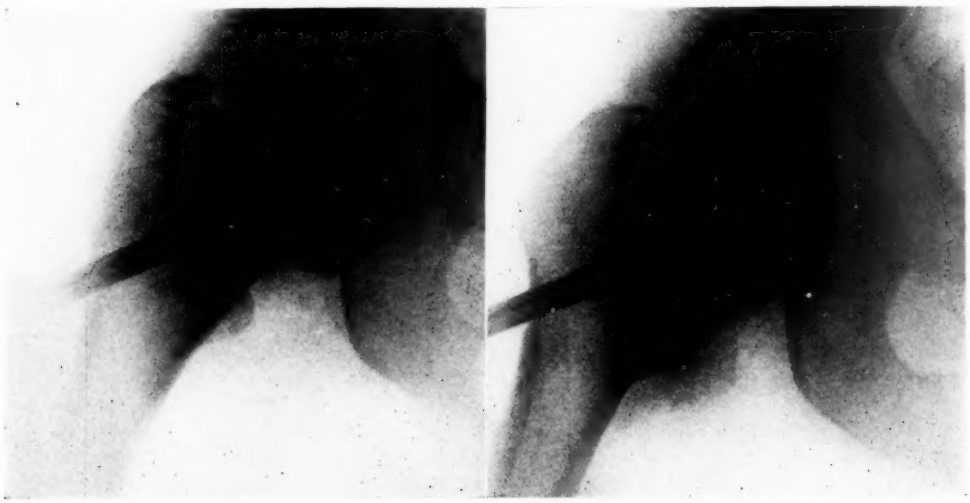

Fig. 8.—Case No. 3. Fractured neck of the femur after reduction; (C) and (D) showing progress of pin.

fragments remained good. Immediately following the operation passive motions of the hip were found to be normal in all directions. The examination on the next day after his having walked around the ward without support showed some limitation of abduction and internal rotation. Possibly some shortening resulted from premature weight bearing but this was so negligible that it could not be determined when compared to the normal, the measurements from the anterior superior spines of the ilium to the malleoli being equal on both sides. He was discharged from the hospital on the fourteenth day complaining of no discomfort except that due to his general condition.

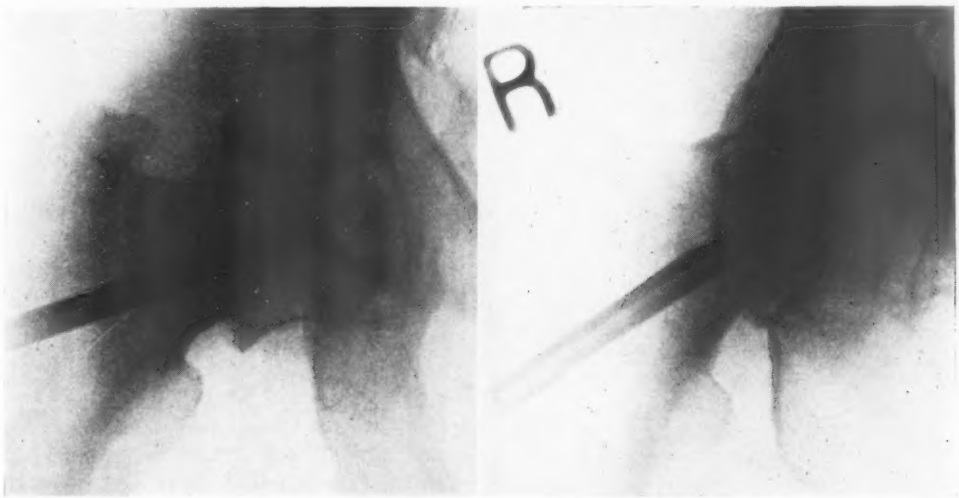

Fig. 9.—Case No. 3. Fractured neck of the femur; (E) With pin inserted; (F) Ten days after operation. Note slight bending of pin due to patient having walked immediately without support.

The bladed stainless steel nail has been used in these cases because the patient's general condition would not allow an open reduction with internal fixation or a Whitman reduction with cast. No external fixation was used except in the first case, when a Buck's extension with a few pounds of weight was employed for twenty-four hours.

Case 1 walked without crutches at the end of the fifth week of his own volition. He was advised to discontinue weight bearing without crutches for five to seven weeks longer, even though with full weight bearing, motions of the hip remained normal and produced no discomfort, and roentgenograms showed perfect reduction and position of the fragments.

Case 2 remains comfortable. The fractured fragments remain in good position but the point of the pin resting on the posterior rim of the acetabulum limits free motion of the hip. As a result of not having an extractor at the time of the operation, the course of the pin could not be changed and the operation should be repeated.

Case 3 has continued weight bearing both with and without crutches since he began to walk twelve hours after operation and cannot, because of his mental condition, be made to realize the necessity of rest from weight bearing to the fragments. Apparently, after his first excursion, no further damage has been done to the hip, as the X-ray negatives show the fragments in good position with no further bending of the pin. The measurement of the right leg continues to show no shortening as compared to the left, and there has been no increase in limitation of the motion of the hip joint.

Conclusions

1. Recent transcervical fractures of the femur may be reduced and transfixed by a surgical procedure requiring six to ten minutes.
2. The shock of a major operation is eliminated.
3. External fixation is eliminated.
4. The patient after but a few hours is ready for a wheel chair or, if so disposed, may at once enjoy the use of crutches.

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The writer wishes to acknowledge with thanks, the cooperation of Dr. Charles H. Peterson, of Roanoke, Va., in the making and the reading of the roentgenograms in the operative cases and in the experimental work on the cadavers. Also, he wishes to express appreciation for the courtesy and privileges extended to us by the Anatomical and Roentgenological Departments in the use of the cadavers and other materials at the University of Virginia.

206 *Medical Arts Building.*

TREATMENT OF DEPRESSED FRACTURES OF THE VAULT, AND THE PREVENTION OF INTRACRANIAL INFECTION IN CERTAIN FRACTURES OF THE BASE OF THE SKULL.*

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In a series of 1,383 hospital patients treated by the writer and his associates for head injuries, there were 531 fractures of the skull. Of this total number of fractures, eighty-eight, or 16.5 per cent, were listed as depressed fractures of the vault. Thirteen patients in the depressed fracture group died—a mortality of 14.7 per cent.

Depressed fractures of the vault, extradural hemorrhage and subdural hematoma are more or less clear-cut lesions following head injury, and all require a cranial operation. Any of them may be combined with widespread contusion and laceration of the brain. The intensive study of one or more lesions resulting from head injury would appear to be productive of better results than to attempt to group all of the effects in a single discussion. While the gravity of a head injury is not dependent upon a fracture of the skull, the fact remains that in any large series of cranio-cerebral trauma, the mortality rate varies with the percentage of fracture cases in the series. A relatively large number of fractures in a series of head injuries means a correspondingly high mortality from more extensive trauma of the brain, generally found in patients with fracture.

Because of the large number of cases, their serious nature and the economic relations, the treatment of head injuries is the most important problem engaging the attention of neurosurgeons and others whose interests lie in surgery of the brain. Some of these problems are best met by a policy of non-interference, some by cranial operations to offset pressure or prevent infection; but, regardless of the treatment eventually adopted, all cases of cranio-cerebral injury require intelligent study in order that the problems may be adequately met.

The discovery of skull fracture may be of great importance in the diagnosis of patients who are unconscious and without gross signs or history of injury. Careful examination of the scalp and X-ray of the skulls of such patients should be routine. The direction of a fracture line may strengthen the suspicion of an extradural clot, the diagnosis of which is too often reached after much hesitation and delay, even among those who have considerable experience with intracranial injuries. In view of the help which the study of skull fractures gives in indicating the type and location of the associated intracranial injury, I do not unreservedly endorse the prevailing tendency apparent in many papers on the subject, to give slight consideration to simple fractures of the skull. The entire injury of brain, skull and scalp should receive adequate attention.

The present discussion is limited to a consideration of (1) simple and compound depressed fractures of the vault, (2) certain fractures of the base involving the accessory sinuses.

The treatment of depressed fractures of the skull at the present time is based upon the practically unanimous opinion that if depressed fragments are not lifted from the brain, epilepsy is a very probable result. Convulsions following untreated depressed fractures are due to the injury to the brain produced at the time the fracture is received, and not to the mere depression of bone. If the dura is not penetrated by the depressed bone, convulsions are infrequent, according to Wagstaffe[1] who found epilepsy in 1.6 per cent of 820 cases in which the skull was fractured but the dura not torn, as against 18.7 per cent of cases with dural penetration. Naffziger[2] concluded, as a result of experimentally produced depressed fractures, that the indentation of the brain covered by intact dura, produced no pathologic changes in the brains of rabbits, even when a 5 mm. bead was inserted between

*Read before the Southern Surgical Association at its annual meeting held at White Sulphur Springs, W. Va., December 8-10, 1931.

the dura and skull, to produce pressure. Naffziger's experimental work is valuable as an effort to determine from scientific experiment the actual brain damage from the depression of bone without concomitant brain injury, but the controlled insertion of a foreign body between the dura and skull has no clinical counterpart in depressed fractures produced by violence affecting the brain as well as the skull. Several factors may be operative in causing the local brain damage of the ordinary depressed fracture of the skull. Contusion of the brain beneath the depression is almost inevitable, even in the cases of slight depression. When the depression is considerable, laceration of the dura and brain with hemorrhage, and scar formation binding the membranes to the brain, are natural consequences. If spiculation of bone is present, and it may be even when the outer table is smooth, the reparative process must necessarily exceed that of cases in which the brain is not pierced by bone fragments. Indriven spicules of bone stimulate more glial and connective-tissue proliferation with the production of a larger scar. Treatment of a depressed fracture is therefore inadequate, if it is designed for the sole purpose of elevating the depressed bone, which is perhaps the least harmful element of the situation. Penfield,[3] in the treatment of four carefully selected cases of epilepsy following depressed fractures, excised the scar in the brain with good results. Prevention of epilepsy is a far more promising field than the cure of epilepsy, provided prevention is kept clearly in mind when the primary operation is done for depressed fracture with laceration of the dura and brain. In other words, proper treatment of the lacerated brain is of greater importance than elevation of the depressed bone. Contused lacerations of the scalp, whether simple or overlying the depressed fracture, should be cleanly excised. The excision of the scalp laceration, the elevation of depressed fragments of bone, débridement of the contaminated dural laceration, and removal of indriven spicules of bone with the lacerated and pulpified brain tissue, should be deliberate and thorough. In cases of fracture due to gunshot wounds the same principles of treatment are followed, except that greater difficulty will be experienced in removing from the brain the débris consisting of bone fragments, blood clots and foreign bodies. The modern method of treating penetrating fractures of the skull was described in detail by Cushing,[4] but some of the important principles taught in this article appear to have been lost sight of. While the prevention of septic encephalitis is the primary purpose of treatment of compound depressed fractures, of secondary, though scarcely less importance, is the prevention of the formation of large, disabling scars, which are known to be a cause of epilepsy. In simple depressed fractures, and in many which are compound, it is practicable to use the fragments of bone to fill in the defect made in elevating the fracture. In a short time a defect thus covered is practically as firm as the surrounding skull. If it becomes necessary to sacrifice the bone in the treatment of simple or compound depressed fractures, a perforated celluloid plate may be used at the time or later, in preference to any kind of autogenous graft.

Attention has frequently been called to the difficulties of operation upon those depressed fractures overlying the large venous sinuses. In one early case of our series, in which there was a compound depressed fracture with perforation of the longitudinal sinus, a furious hemorrhage resulted upon elevation of the fragments. Because of the serious condition of the patient, gauze packing was resorted to to control the hemorrhage. The patient finally recovered after the formation of a large fungus and a right parietal lobe abscess. This is the only case of fungus or infection of the series of eighty-eight depressed fractures in which there was no communication with the accessory sinuses. Fungus formation following operation on depressed fractures of the vault results from the failure to excise the laceration and suture the scalp in layers, from not closing the dural perforation and from the pernicious use of gauze drainage, which is too commonly employed even at the present time.

Patients with old compound depressed fractures are fortunately rare at the present time, and seek operation nearly always because of convulsions. Culture of the bone fragments will sometimes show pyogenic organisms in these fractures for many months after the wound is healed. The repair of defects by either bone-graft or celluloid plate in such a case at the time the old depressed fracture is operated upon is likely to fail because of latent infection.

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Fractures of the Base Affecting the Accessory Sinuses

Practically all the cases of meningitis that have resulted from head injuries, in my experience, have followed those injuries in which the fracture line passed into one of the accessory sinuses, mastoid or middle ear. Meningitis as a result of compound fractures of the vault is rarely seen, except as a terminal event of septic encephalitis, which is a common result of badly treated compound depressed fractures. Bleeding from the nose, mouth or ears in the absence of evidence of external injury to account for the hemorrhage, is usually due to fracture of the base of the skull, either in the anterior or middle fossa. It is frequently difficult in the presence of such bleeding to determine whether or not cerebrospinal fluid is mixed with the hemorrhage. Undoubtedly, escape of cerebrospinal fluid with the bleeding, is a much more common occurrence than is generally believed. The incidence of meningitis in such cases is determined largely by the presence or absence of infection in the bony sinus through which the fluid is escaping from the subdural space. A leakage of clear cerebrospinal fluid through the nose or ear may persist for an indefinite period after bleeding has stopped, or it may not appear until some weeks after the injury, when the patient is thought to be on the road to recovery. A cerebrospinal fluid leak following fractures of the skull naturally lowers the intracranial pressure. The escaping cerebrospinal fluid pooled in an infected bony sinus may, as a result of the varying intracranial pressure, re-enter the subdural space, thus carrying infection into the meninges. While it is true that cerebrospinal fluid leaks may continue for many years without producing meningitis, yet infection almost invariably occurs sooner or later. In one recent case the patient developed a fatal meningitis from a cerebrospinal fluid leak of ten years' duration.

The early entrance of air into the subdural space or ventricles, following fracture of the skull involving the accessory sinuses or mastoid, may be an accompaniment of a cerebrospinal fluid leak, and is probably due to the condition of sudden variations in intracranial pressure, with the production of a condition known as "brain flap," as described by Heathcote and Henry.[5] Dandy,[6] in a review of the literature on pneumocephalus, collected twenty-eight cases and reports three of his own. He states that the condition, if untreated, has a mortality rate of 40 per cent, and that the diagnosis of air in the brain can be made upon a history of sneezing followed by the sudden escape of cerebrospinal fluid from the nose. Rand[7] reports eight cases of pneumocephalus following skull fractures, three of whom died of meningitis. One of these cases was operated upon after the onset of a fatal meningitis. The remaining five cases recovered following operation with closure of the rent in the dura. We have recognized three recent cases of pneumocephalus complicating head injury, with fractures involving the accessory sinuses. In each case the entrance of air into the brain was detected shortly after the accident occurred. All of the patients received rather severe head injuries and shock was present in every case. It does not appear that in the cases in which air enters shortly after injury, the air is forced into the brain, as might be inferred from the histories of the cases, in which the entrance of air followed sneezing. When the air enters the dura immediately after the injury, the lowered intracranial pressure with marked variations due to vomiting or labored respiration is probably responsible, and the air is aspirated into the dura rather than forced as during the act of sneezing. The presence of air, with or without a cerebrospinal fluid leak, is a condition with serious possibilities. Such patients often have rigidity of the neck due to the presence of air, before infection of the meninges takes place. The situation is simply one of compound fracture of the skull in which the cavity of the dura is in communication with a potentially or actually infected space. In two of our cases the air was demonstrated within an hour after the patient was admitted to the hospital. By the following day it had decidedly lessened in one of them, and a few days later had entirely disappeared. A policy of non-interference was decided upon in view of the rapid disappearance of the air from the ventricles and subarachnoid space. The air in this case entered through a fracture of the frontal sinus. The patient made a good recovery. The second case was admitted to our service four days after air in the meninges had been demonstrated by X-ray. Fatal pneumococcic meningitis had already developed. The fracture in this case was through the ethmoid region. The

patient died quickly after the onset of meningitis. In view of the danger of meningitis in persisting cerebrospinal fluid leaks through the nose, and in cases of air in the subarachnoid space or ventricles, we believe that operation for closure of the dural laceration should be done as soon as the patient has recovered from shock, provided the leak continues or the amount of intracranial air has not lessened.

The treatment of persistent cerebrospinal rhinorrhea, with or without pneumocephalus, by radiotherapy and position of the head, as described by Bromberg,[8] might be attended in rare cases by spontaneous closure of the dural perforation. It should be remembered, however, that the onset of a complicating infection of the accessory sinus involved, with an extension of this infection to the brain, may happen at any time, and delay in closing the perforation may cost the patient his life. The dural laceration can often be reached and closed with sutures, fascial strips or muscle grafts, through the defect made in operation upon the depressed fracture. If there is no depressed fracture about the frontal sinuses, a small osteoplastic flap may be made. The dura overlying the orbital plate and ethmoids is lifted up from the bone and the dural perforation sought for and closed. The operation is extradural throughout, in repairing such leaks. In one such case, with comminution of the base of the anterior fossa and with incarceration of the dura in the crevices of the bone, a leak took place weeks after the patient had apparently recovered from a depressed fracture of the frontal region. No air was demonstrated in the skull in this case. The closure of the dura was accomplished through the defect made at the previous operation upon a compound depressed fracture involving the right frontal sinus. It was impossible to prevent further tears of the dura in releasing it from the old fracture lines of the base. A perforation of the dura had occurred over the ethmoid sinus on the right side. A large flap of fascia lata was sutured over the dura with closure of the leak and recovery of the patient.

In view of the fact that pneumocephalus may develop weeks after the fracture of the skull, it seems advisable to re-X-ray certain cases of fractures involving the sinuses or mastoid, in which recovery is retarded without reasonable explanation. Some of these cases may show air in the meningeal spaces or ventricles. We have had no suitable case for repair of a dural defect with persistent fluid leaks in which the fracture of the skull involved the mastoid. There appears to be no reason why the same policy of operative interference should not be adopted in some of these cases to prevent infection, as has been found to give the best results in pneumocephalus and cerebrospinal-fluid leaks in fractures of the anterior fossa.

Summary

1. The prevention of epilepsy and headache following depressed fractures of the skull is more likely to succeed if, in addition to the elevation or removal of depressed fragments, such treatment of the injured brain is carried out as will limit the amount of cortical scar-tissue. The treatment of the local brain injury underlying the depressed fracture is of greater importance than the mere elevation of the depressed bone. Compound fractures of the vault require early operation to prevent infection of the brain and to minimize the late bad effects of the local injury.

2. The principles of surgical treatment of compound fractures of the vault for prevention of infection should be extended to certain fractures of the base, in which there is a communication between the meningeal spaces and the sinuses, as shown by a continued cerebrospinal fluid leak or air remaining in the brain tissues and cerebrospinal fluid spaces.

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RADIOTHERAPY IN NON-MALIGNANT CONDITIONS.*

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Popular discussion in the public press has made the general public and the profession

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fairly familiar with the treatment of cancer by means of radiotherapy. Also much has been written regarding the benefit of radiotherapy with radium or roentgen ray in the treatment of malignant conditions. Most of the medical profession are fairly well acquainted with these methods in the treatment of cancer. Few medical men realize the advances that have been made in the last few years in radiotherapy in the treatment of other medical conditions. Because the treatment of cancer has been so widely discussed in non-medical literature, as well as medical literature, physicians have kept up with the latest advances along this line. Probably in the largest and most modern hospitals and clinics, radium and roentgen ray therapy are more generally used at the present time in the treatment of other medical conditions than in treating cancer. The practice of radiotherapy has made so much progress since the average practitioner of medicine left medical school and his interneship that unless he has been in close contact with medical centers he has not had the opportunity to become familiar with the advantages of radiotherapy in many conditions.

So much progress has been made in the last few years in radiotherapy that practically nothing is mentioned in the latest textbooks of this method of treatment, except its application in malignant conditions. The progress has been so fast that textbooks are often out of date by the time they are ready for distribution. It is only by contact with the medical centers and clinics that the best methods of treatment by radiant energy can be secured. This subject is so broad that it will only be possible to review in a brief way the most important non-malignant conditions in which radiotherapy will be useful. Radiotherapy in dermatology is a field within itself and chronic skin conditions will not be taken up in this discussion. However, in passing, I might say, no dermatologist would consider the treatment of many skin diseases without the use of radiotherapy.

Too many medical men are unwilling to try radiotherapy because they do not believe its application is specific and because its results are not always perfect. They seem to forget that we have very few specific therapeutic methods and all results are often doubtful or uncertain as to permanent cure. Radiotherapy will often alleviate and extend the life of a person when there is no other method of treatment. The results, although only palliative, both mentally and physically, are often worth the cost and trouble. Patients' lives may not only be saved but many useful years of life may be added without pain and frequently without worry.

In all cases where radiotherapy is used, the results will depend, in a large measure, upon the ability of the physician rendering the treatment. In this discussion no distinction will be made between the use of radium and the roentgen ray, because either has its use in different conditions and it should be left to the judgment of the radiologist as to the technique to be applied. The radiologist should be a physician well trained in general medicine as well as in radiotherapy, and not just a man who owns some roentgen ray equipment or radium. Probably more harm can be done with roentgen ray and radium when wrongly used than with any other method of treatment, or else insufficient amounts of exposure may be given to do any good whatsoever and thereby delay efficient treatment of a similiar or different nature by other physicians.

In discussing diseases that may be benefited by radiotherapy it will only be possible to mention a few that experience has shown will be helped sufficiently to justify its application. It would take entirely too much time to discuss the technique of application in different diseases. There are many articles in the medical literature discussing at length the application of radium or roentgen rays in any particular condition, and monographs have been written on many of them.

I will take up first those conditions that respond most beneficially to radiotherapy, and those where this is the most useful agent, alone or in combination with other methods of treatment.

All lymphoid structures are very susceptible to radiant energy. Hodgkin's disease and the leukemias, either splenomyelogenous or lymphatic, respond in the beginning to a remarkable extent. The enlarged glands of Hodgkin's disease will melt away in a few days. The treatment will have to be continued, at intervals, over a long period of time. Although radiotherapy cannot cure Hodgkin's disease it can add from five to ten years of useful life to the patient. Radiotherapy has completely replaced surgery in this disease. Hodgkin's disease is more often treated by too

little radiant energy rather than too much. In the beginning the leukemias are equally as benefited and the radiologist will have to get daily blood counts to prevent lowering the leucocyte count too rapidly and too much. The spleen will retract to about normal size and the patient will resume his normal activity for a long period of time, but the symptoms and high leucocyte count will recur with relief by radiotherapy over a period of years. The pathologic leucocytes gradually become resistant to radiant energy, and treatment of no kind is of any avail. Agranulocytic angina, or malignant sore throat with a leucopenia, is receiving considerable attention in the medical literature at the present time. Radiation in stimulating doses is by far the best method of treatment and many permanent cures are being reported in the literature. Persistent thymus in babies or young children may be a serious condition, but the thymus gland can be easily reduced to normal size by a few applications of roentgen ray. In most large hospitals roentgen ray examination of the chest is a routine procedure before operating on young children and, if an enlarged thymus is found, radiotherapy is applied before an anesthetic is given. There are other rare conditions of the chest where roentgen ray or radium is the only efficacious method of treatment. Actinomycosis and blastomycosis, wherever situated, should be treated by persistent radiant energy application. This offers the only hope of relief known to the profession. There are other rare conditions, particularly tropical fungus diseases, which there is no hope to benefit, except by means of radiotherapy. Radiotherapy has already supplanted surgery in the treatment of tuberculous adenitis. These glands, regardless of their stage of involvement, respond exceedingly well to this form of treatment. As in most conditions, the earlier the treatment is started, the quicker results will be secured. The surgeon should be very severely criticised for removing tuberculous glands except under very unusual circumstances. Of course other hygienic measures should be instituted in addition to the radiotherapy because of the tuberculous condition.

For several years there has been a great deal of argument and discussion as to the relative merits of surgery and radiotherapy in the treatment of hyperthyroid or toxic goiters. Removal of such goiters has been the custom for so many years that it has been difficult to educate the general profession to the understanding that radiotherapy is equally and more often beneficial in the treatment of this condition than surgical removal. There are always exceptions but, generally speaking, radiotherapy is gradually replacing surgery in treating these types of goiters. In some of our largest cities more patients suffering with toxic hyperthyroidism as being cured with the roentgen ray and radium than by means of surgery. Some of the strongest advocates of surgery for many years are now willing to admit that radiant energy is equally as satisfactory as the scalpel. The amount of thyroid tissue rendered functionless can be more easily controlled with the treatment extending over a period of time, than by removal at the operating table. If too much of the thyroid gland is removed, the patient will have to take thyroid gland substance for a long period of time, and if too little is removed the patient will have to submit to another operation or else get no relief. Recently I treated two cases of hyperthyroidism, who, a short time before, had had part of the thyroid removed, but had not been relieved of their thyrotoxicosis. In both cases the surgeon had referred the patients to me, frankly admitting, that not enough of the gland had been removed. For a full discussion of the treatment of hyperthyroidism by surgery or roentgen ray I will refer you to many recent articles in the literature covering this field very fully.

There are many benign tumors that are sensitive to radiant energy. Some of them may be remedied with ease, by surgery, but many patients have the greatest fears of even the simplest operation, and although surgery may be quicker and more convenient, yet these patients will not submit to an operation of any kind and prefer radiotherapy when they understand its possibilities. Fibroids of the uterus are now being treated with excellent results by means of the roentgen ray or radium. Where a patient has reached, passed, or is approaching the menopause, and there is the slightest contra-indication to a laparotomy, then radiotherapy is strongly indicated. In younger women, consultations should be had with both a surgeon and a radiologist, regarding the form of treatment best suited. Angiomas and nevi of the skin can be made

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to completely disappear by applications of the roentgen ray or radium. This form of treatment is by far preferable to removal and skin graft. Regardless of the size of these large purple birthmarks, if they are treated early, the skin can be made to resume almost its normal color. These unsightly marks can be removed without scar formation, and will relieve the child of a severe inferiority complex which would be a great handicap in his future life. Keloids when removed surgically are almost as likely to recur as they were to come in the beginning. They can be completely removed, leaving only a white scar, by a few applications of radium. The very largest ones, with a red unsightly color, will immediately be improved in appearance by the application of radiant energy. Warts and moles and many superficial benign tumors can be painlessly and easily removed. The same is true with callosities. Leucoplakias will clear up with no difficulty whatever, with only a few applications to the surface.

Inflammatory diseases of both the acute and chronic variety are now being relieved and cured by every radiologist. In a recent article by Desjardins, the entire field of radiotherapy, in the treatment of inflammatory conditions, is reviewed. As above stated all lymphoid structures are very susceptible to radiant energy. In any inflammatory condition, the lymph channels are filled by devitalized lymphocytes, thereby obstructing the path of lymph flow and preventing normal lymphocytes reaching the inflammatory area. A few applications of roentgen ray or radium will completely destroy these devitalized lymphocytes, liberating opsonins, and permitting new lymphocytes to come in and fight the battle. Radiant energy within therapeutic doses has little effect upon bacteria and after an inflammatory process has reached the liquefaction and pus stage, radiotherapy in this area will not produce the good effects that would be secured if earlier treatment was given. Erysipelas, if treated on the day of its beginning and the days immediately following, may be almost completely aborted and always limited to a small field. The pain of herpes zoster can be relieved in a few hours and the lesions will dry up and heal usually within 24 hours from the time of the first treatment. Carbuncles and furuncles will be small and insignificant if the treatment is started quickly, and systematic measures carried out at the same time to improve the general condition. To wait until the central portion has undergone necrosis and pus formation, necessitating an incision and drainage, is poor treatment in the modern care of this painful and sometimes serious condition. When the site of the inflammatory condition is being treated with radiant energy or other methods, the enlarged glands protecting this area should receive at the same time, sufficient radiotherapy to prevent breaking down of the glands and further extension. Any old, chronic, inflammatory process, where the lymph and blood vessels have become obstructed and congested due to the long drawn out condition, will be benefited by radiotherapy. This is especially true of old chronic cellulitis, lymphangitis, chronic phlebitis and chronic adenitis. Many surgical cases where the gross pathology has been removed, leaving a draining sinus, will often heal following a few applications of roentgen ray. Sinuses will close up in a few weeks, normal lymphatic drainage will be established, and the patient will be grateful for a rapid convalescence. Radiotherapy is almost specific in chronic parotitis. Old cases of granuloma annulare that have refused to heal under any form of medical treatment may respond very beneficially to applications of radiant energy. In the removal of tuberculous organs, particularly the kidney and pelvic organs, a tuberculous sinus will remain, unless the area receives radiotherapy postoperatively. At least the field should be given treatment as soon as the sinus shows it is not going to heal.

There are many conditions where different forms of medical or surgical treatment do little good or at least do good in one case and not in another. The type of treatment has to be changed until some method will give relief. Radiotherapy is frequently very beneficial in these cases although the percentage of total relief or cure may not be great. I have seen several cases of trifacial neuralgia that received more relief from roentgen ray treatment than any other kind, except ganglionectomy. One of my last cases received more relief, lasting for several months, from one treatment of roentgen ray than he had ever received from injections of alcohol. Many cases get relief for a long period of time and many others get sufficient relief to prevent a severe and dangerous operation. Some cases are only temporary or only slightly benefited and a few get no results whatever. The same

is true of whooping cough. When radiotherapy is used, the course of the disease is cut short, and the number and severity of paroxysms are markedly lessened. It practically never stops the condition and there may not be noticed at the time any improvement, but a record, when kept, will show the average duration was lessened by several weeks. The pains of angina pectoris are frequently relieved and sometimes recurrences prevented over a variable length of time. The reason for this relief is hard to explain except that it is a well-known fact that radiotherapy will alleviate pain in many cases. Whether the radiant energy deadens the nerve endings, relieves the congestion, or removes inflammatory conditions is not thoroughly understood, but experience has proven that radiotherapy will often produce relief when every other method has failed. Addison's disease has been benefited by deep therapy. The more recent hormone treatment is now producing better results but there seems to be no contra-indication to applying radiant energy to both adrenals at the same time other treatment is being instituted.

There are many upset physiological conditions that are both painful and inconvenient in which radiotherapy is of the greatest benefit. This is especially true in the treatment of menstrual disturbances and in pathologic conditions in the female generative tract. Women who are afflicted with severe cramps and flow, every month may be given almost immediate relief in a short time. Although frequently this condition may be due to poor living conditions and other extraneous reasons, yet they will not be benefited as long as they suffer pain, loss of sleep and appetite. In young women, if the menstrual function is temporarily discontinued, by means of radiotherapy the patient will get her rest, gain strength and weight and, by the time the menstrual function is reestablished, her general condition will be so much improved, the normal physiologic condition will go along in the normal way. Menorrhagia may be the result of a small polyp or other minor pathologic condition, such as small submucous fibroids which radiotherapy will cause to disappear, and the patient will be relieved without a major surgical operation. Elderly patients approaching the menopause have many nervous as well as pelvic symptoms. Maximum doses of radiotherapy can be given, bringing on the menopause rapidly and thereby helping them over a very trying time in life. Instead of the menopause lasting from six months to a year, it can be shortened to a month or two. Because of deformities, poor health and many other reasons, it is frequently necessary that a woman bear no more children. Instead of submitting her to a surgical operation, a maximum dosage of radiotherapy will produce a permanent total castration in a painless and simple manner. A large number of patients can be benefited by radiotherapy during menstrual disturbances by giving them a temporary rest, gain in haemoglobin, and general improvement in health.

There are innumerable instances where favorable results have been secured in a large variety of unusual conditions. Case reports occur in every issue of the radiological journals, of relief or cure in many conditions that have never had radiotherapy previously. Sufficient statistics have not accumulated in these rare conditions to justify conclusive opinions regarding the result of radiotherapy in these cases, but further investigation will determine the value of this agent. For example, favorable results have been obtained in such conditions as hyperacidity, peptic ulcer, and hypertrophy of the prostate. European radiologists are doing considerably more investigative work in the treatment of medical conditions by radiotherapy than in this country. The German literature is especially full of accounts of relief of a large variety of unusual conditions. For example, a recent article discusses the cure of the majority of a large series of cases of congenital pyloric stenosis. Pneumonias are being treated in large numbers. Time does not permit even the mentioning of a large number of cases that are being investigated.

Because of the fear of surgical procedures, the layman is becoming more and more familiar with the advantages of radiotherapy, sometimes more so than his personal physician. Patients frequently come to me asking for relief, having heard of others being helped by radiotherapy and wishing to try it, even when their personal physician, through ignorance, assures them that it will be of no benefit. Cooperation should always be secured between radiologist and referring physician and in many of these cases the patient has to be told that radiotherapy would be of no benefit in his case, but the family physician must keep familiar with the latest methods of treatment else his patient will lose confidence in him.

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THE DIFFICULTIES IN THE DIAGNOSIS OF ATYPICAL CASES OF PULMONARY TUBERCULOSIS.*

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For the past twenty years the deaths from tuberculosis in the State of Virginia have been slowly but surely declining. The Vital Statistics law, requiring all deaths to be reported to the State Board of Health, was enacted in 1912, but it was not until three years later, or in 1915, that reliable figures were compiled which would justify an accurate analysis. During that year 4,003 deaths were reported from all forms of tuberculosis in both white and colored (doubtless many more occurred which were not reported), while during 1930, only 2,224 deaths were recorded. This decrease is more startling when we consider the fact that the population of the State has been steadily increasing and the law requiring the reporting of these deaths has been more rigidly enforced. A fifty per cent reduction of the death rate from tuberculosis during this period of fifteen years would seem a conservative estimate.

What are the factors in operation responsible for this reduction? Obviously, many agencies claim credit for this and must be taken into consideration. The newspapers and magazines carry articles daily on how disease is spread and the prevention of it, and these are read by the laity; the average child in the sixth or seventh grade in school can tell you from his studies in hygiene how to prevent disease, and can name the organisms causing the more common communicable diseases; there is a wide distribution throughout the State, of county, town and city health units and a dissemination of health knowledge by them; the physicians today are more interested in preventive medicine and are teaching it to their patients; campaigns in the early diagnosis of tuberculosis are being waged annually; and medical students are being trained in the finer points of the early diagnosis of the disease. All of these agencies and many others too numerous to mention must share in the glory with our people through this reduction in the death rate from a much-dreaded disease.

Even then is there not room for further improvement? Should we not continue our fight on this disease with renewed vigor through all these routes? The cases applying for admission to the State sanatoria are, as a whole, earlier and offer a better prospect for recovery but there are still too many people being permitted to lose their best chance for recovery through delayed diagnosis and for lack of thorough study of the case. The time allotted to this paper will not permit a detailed analysis of all the finer points in diagnosis, nor the consideration and elimination of all the diseases most commonly confused with tuberculosis in reaching a conclusion. It is hoped, however, that some help may be given and a deeper interest aroused so that the death rate will show a more rapid decline and the diagnosis and treatment not delayed too long for lack of proper application of all available data.

The first part of the paper will deal briefly with the various factors to be taken into consideration in making a diagnosis of tuberculosis in the average uncomplicated case. Routine procedure is necessary to avoid pitfalls along the road. It is not unwise to list these points and post them in your office. They have been referred to often in recent years and given various names: Brown[1] called them "The diagnostic poctulates"; while Henry referred to them as "The diagnostic yardstick." Some cases are so plain that the diagnosis is obvious and it is not necessary to apply all these points, while others are so obscure that all seven points must be worked to the limit in order to avoid mistakes: They may be listed as follows:[2]

1. History.
2. Symptoms.
3. Physical Signs.
4. X-ray Evidence.
5. Tuberculin Test.
6. Laboratory Tests.
7. Exclusion of Other Causes.

History

History-taking is time-consuming and laborious, and not many of us like it. But, often, it furnishes the key to the true condition. Is it not possible that general practitioners are too much inclined to look on the diagnosis of early tuberculosis as hard and requiring great skill and training in the use of the stethoscope, when a well-taken and closely-studied history which they can take as well as any one would be all that is necessary to make the diagnosis? Pottenger[3] says: "In most instances patients

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showing the early signs of tuberculosis present sufficient data for diagnosis to be made by any man who has been well trained in medicine, if only he will bear tuberculosis in mind and carefully study and examine his patient. It is only the exceptional case that offers great difficulty. Probably 80 per cent of cases, as they present themselves, could be diagnosed by a careful study of the history alone."

One of the most important points in the history is to ascertain whether the patient has been intimately associated with any tuberculous person. Remember, a person may have contact with or exposure to an "open" case and yet not contract the disease, but a history of contact in the face of other evidence strengthens your diagnosis. Exposure should have greater consideration in the diagnosis of a childhood case than in that of an adult case, because children are more susceptible to the disease.

Symptoms

It may be said that the onset of practically every case of pulmonary tuberculosis falls under one of six headings from a symptomatic standpoint: Hemorrhagic, pleuritic, febrile, catarrhal, insidious, gastro-intestinal. To consider these from a broader viewpoint, let us divide the symptoms into two classes—local and constitutional.

The Local Symptoms are the result of local irritation of the respiratory tract, or of structural damage of the pulmonary tissue, such as ulceration, cavity formation or hemorrhage. These symptoms are pleurisy, hemorrhage, cough and expectoration, hoarseness and huskiness.

Pleurisy, as indicated by pain, may be mistaken for many ailments. If located in the shoulder and radiating down the arm, it may be called neuritis or rheumatism; if along the lateral chest wall, for intercostal neuralgia; if in the region of the lower thorax, that is, down on the diaphragm, for appendicitis or disease of some of the other abdominal organs. If the thoracic pain is due to pleurisy, it is usually made worse by having the patient breathe deeply for a few times. If the pleurisy be acute in type, the pain is sharp and stabbing; while a chronically-inflamed pleura may cause only burning or dull aching. Pleurisy may precede, by many months or even years, a definite pulmonary lesion, and who has not seen advanced cases who, on close questioning, gave a history of having had "fluid removed from the side" years ago? Pleurisy with effusion, especially in young people, like frank pulmonary hemorrhage should be considered as due to tuberculosis and treated as such until it can be proved otherwise.

Hemoptysis — blood-spitting — may vary from a slight streak in the sputum to a definite hemorrhage of a dram or more. Hemorrhage most often occurs in patients with fairly marked disease, after ulceration and perhaps cavity formation, although sometimes it is the first indication of trouble. When it does occur early, it is fortunate for the patient, as the diagnosis is usually established. It seems useless to say that tuberculosis is the most constant condition causing it.

Cough and Expectoration: It is a common thing for visitors to the Sanatorium to note and comment upon the fact that the patients do not cough. The advanced cases with cavity formation usually cough some but the average minimal or moderately advanced cases do not. Even this condition may exist before the diagnosis is made, or before the patient comes to the Sanatorium and starts treatment. It may be stated that there is no characteristic cough or expectoration of the disease. Catarrhal conditions of the larynx and bronchi may cause cough, and such a condition may go on for months, or even years, and have no significance. But any cough following a "cold" or influenza, which persists for four to six weeks following the infection and will not respond to the average medicinal measures, should be looked upon with suspicion and a thorough chest examination made, as well as a thorough search made of the sputum for tubercle bacilli. This custom will prove a life-saving measure to many patients and, while they may not appreciate it at the time, in later years they will feel a deep and lasting gratitude to you for your thoroughness and frankness. Usually, early in the disease the cough is only noticeable in the morning on rising and is dry and nonproductive but, as the lesion progresses, the cough increases and may become spasmodic in type, and is excited by lying down, laughing, talking, exercise, etc. The sputum at first is mucous in character but as the disease advances it changes to thick, dense muco-purulent material which shows small yellowish spots of pus and cheesy material floating in it. It is these small, dark, cheesy masses which usually contain tubercle bacilli. One case reported here

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illustrates the importance of searching the sputum closely for such minute areas for examination (see case report No. 3).

Hoarseness and Huskiness: These symptoms, when present, should always be investigated as to origin. They may be due to a toxic condition affecting the laryngeal muscles, or may be the result of definite laryngeal tuberculosis.

Constitutional Symptoms: These are numerous and are due to the tuberculous toxins affecting the body generally. The most common are fever, tachycardia, anorexia, "indigestion," loss of weight, loss of strength, night sweats, languor and dyspnoea.

Fever: This condition has long been regarded as an important diagnostic aid. Any fluctuation of two or more degrees between the morning and afternoon temperature must be looked upon with grave suspicion. Many cases will show, if the temperature is properly taken, a persistently low-grade afternoon fever (99 to 99.4 degrees F.), long before any other symptoms are present. None but a certified thermometer should be used and it should remain in the mouth ten minutes. The temperature should be taken at least four times a day over a period of ten days, and recorded. The morning temperature should be taken on rising, before the patient has cleansed the mouth or drunk any water. Also, throughout the day, it should not be taken for at least one hour after eating or until there has been thirty minutes' rest after exercise. *These are important points.* The question often arises as to what constitutes fever. It has been variously estimated, but if we consider the maximum normal points of 99 degrees F. in men and 99.2 degrees F. in women, then anything above these should be considered fever. In tuberculosis the temperature may assume any and all of the various types, according to the type and stage of the disease and the bodily response to it, but the most frequent seen is the intermittent type.[4]

Increased Pulse Rate: This, like afternoon fever, may be the earliest symptom of the disease and noticeable long before anything else. Patients will complain that when lying down the heart beats so fast and forceful it shakes the whole bed. In adults, the pulse rate should normally not exceed 75 to 85 beats per minute, when taken one-half an hour after rest following exercise. The pulse rate in early cases of tuberculosis is usually increased out of proportion to the rise in the temperature and may be detectable before any temperature variation develops.

Anorexia and Indigestion: The tuberculous toxins, through their systemic action, seem especially apt to affect the appetite and digestion. In a review of a series of cases coming to this Sanatorium, it was found that 80 per cent had symptoms referable to the digestive system. These varied from a lack of desire for food to a feeling of fullness and heaviness in the epigastrium, eructations, nausea, vomiting and diarrhea. Gastric analyses showed that 48.7 per cent of this group of patients had hypo-acidity.[5]

Loss of Weight and Strength: Early in the disease there may be a gradual loss of weight without apparent reason and this may be accompanied by loss of strength, lack of endurance and fatigue, not relieved by the usual rest. On rising in the morning patients will say that they feel more tired than when they went to bed. Also, along in the afternoon, before quitting work, they get completely exhausted. In some patients it is really hard to determine whether there has been a loss of weight and, if so, how much, because they are not in a habit of weighing and have no idea of what is their usual weight.

Languor: This, like loss of weight and strength, is one of the early "earmarks." This symptom is insidious and can so easily be attributed to laziness or loss of ambition. The entire body is tired and even the necessary duties, such as bathing, dressing, eating, etc., become a burden. A person who has previously been very active and energetic gets indifferent to his work and does not take the interest in life, including his family and his friends, and matters in general, that he once did.

Night Sweats: This is usually a late symptom, coming when the fever is high and extensive softening incident to cavity formation is going on. It may come early, however, and should have due consideration when present. Localized sweating of the hands, feet and armpits is common in the tuberculous, but profuse sweats, occurring soon after the patient goes to bed and being most pronounced around the head, neck and shoulders, have greater diagnostic importance. Fever and chills are often present with night sweats.

Dyspnoea: This may be a local symptom, as when pleural effusion, spontaneous pneumo-

thorax or extensive disease interfering with proper oxygenation is present, or it may be a systemic symptom due to tuberculous toxins.

Physical Signs

There is no question but that, in the past, in the diagnosis of tuberculosis and allied conditions, too much emphasis has been placed on the chest examination. It is very necessary to strip the patient to the waist and make a systematic and thorough search for abnormalities. But, remember, no one has yet gotten sufficiently skilled in the art of physical diagnosis to determine accurately in every case whether there is trouble and, if so, the character and extent of it. Give your physical examination due weight but there should be a correlation of it with the other points—that is, history, X-ray, laboratory tests, etc.—in the final analysis. We must ever keep in mind that patients hemorrhage and even have tubercle bacilli in the sputum without any demonstrable physical signs, regardless of how closely you search and how well you are trained in the use of the stethoscope. The chronic ulcerative form of the disease, with or without cavity formation, will usually give many signs, including rales, but the acute miliary and early exudative forms will not. It is this exudative type which is usually seen in young adults and it is so important to diagnose early, because if the proper treatment is given they offer a splendid prognosis. Inspection, palpation and percussion should be gone over carefully with every case and worked for all they are worth, but it is auscultation which reveals the most real information to the examiner. Due to lack of space, only auscultation, and that in a limited way, can be discussed. Early infiltrations do not usually give signs, except poor breathing over the upper lobe or the apex. If rales are heard, they are very fine and inconstant in type, and may sound extra-pulmonary in origin. There are two very important points to bear in mind in listening for rales: the patient must be carefully instructed in how to cough, and the examiner must move his stethoscope at the proper time or many rales will be missed. Have the patient force all the air out of the lungs (forced expiration), and just at the end of this give one little deep, short cough, followed immediately by a full inspiration. The object of this procedure is to get as much of the air out of the small bronchi and alveoli as possible with the forced expiration so that the lumen of the small bronchi will be lessened and the cough which follows will stir up the secretions and cause the mucus to block the air passages. The air rushing in with forced inspiration, after the cough, meets resistance from the partially blocked bronchi and is forced to bubble through the mucus. Thus we say that mucous or bubbling rales are heard. Many kinds of rales may be heard by this procedure, such as musical or "dry" rales of asthma and bronchitis. The crepitant and subcrepitant rales, especially the former, are not heard so often, as they occur only in such conditions as very early tuberculous infiltrations, early pneumonias and pulmonary infarction, and the mucous and bubbling rales are the ones in which we are most interested. The medium bubbling rale is characteristic of chronic tuberculosis and is identified by its mucous, bubbling quality and by the time it comes during the cough cycle. It is heard either right at the end of cough or during the first half of inspiration following cough. This brings us to the second important point in listening for rales and that is the time the examiner moves his stethoscope. If the stethoscope is not firmly fixed on the chest, it is obvious that the rales will not be heard when they come. Therefore, it should be moved while the patient is in the act of full expiration and pressed against the chest by the time the cough is started, and kept there all through the cough and inspiration following it. The presence of persistent medium bubbling or mucous rales, heard during cough or during the first half of inspiration following cough, above the second rib in front or the body of the fourth dorsal vertebra behind, means tuberculosis until proved otherwise.

X-Ray Evidence

It is now recognized that the proper taking of X-rays, preferably stereoscopic films, is a necessary procedure in the examination of the chest. Definite parenchymal changes are seen in nearly all instances of proved tuberculosis and in many cases, especially the early exudative lesions, it is the only means of making a definite diagnosis. In such instances the physical examination may not show anything abnormal. The cough and expectoration, if present, will be so slight that a specimen for microscopic examination cannot be gotten and the symptoms will not usually be developed enough to be used as a positive factor; thus

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the importance of making use of this invaluable aid wherever practicable to do so. Again, a study of the films will reveal the type and extent of the lesion present and these are highly important points and almost essential in making a prognosis. A parenchymatous lesion in an apex is significant of tuberculosis.

Tuberculin Test

In recent years the intracutaneous test of Mantoux has replaced the cutaneous test of Von Pirquet. The reason for this was twofold: with the Mantoux test a known amount of tuberculin is given and a larger number of reactors obtained. The Von Pirquet method is simpler, however, and does not require dilution of the tuberculin, nor a syrings and needle to administer it. The latter is worth consideration in administering the test to children, as they are apt to be afraid of the needle. Old tuberculin is the preparation used in diagnosis and the first dose is usually 0.01 mgm., administered intracutaneously. If this gives no reaction, an injection is given every 48 hours, increasing the dose up to a maximum of 1 mgm. (first dose 0.01 mgm.; second dose 0.1 mgm.; third dose 0.5 mgm., and last dose 1 mgm.). A pocitive test is one that shows edema and redness of varying degree within 48 hours. Tuberculin is sometimes given subcutaneously and intramuscularly to adults, although this method of administration carries some risk of a severe general and focal reaction, and should perhaps be confined to those experienced in its use. The intracutaneous test has greater value in childhood diagnosis but in some cases of adults it may prove a strong link in the chain of evidence. A positive reaction always means the presence of tuberculous infection, but a negative test does not necessarily exclude tuberculosis. Acute infectious diseases, acute miliary or generalized tuberculosis and other conditions may cause the test to be negative.

Laboratory Tests

Excluding the sputum, there are no laboratory tests which will materially assist in the diagnosis of pulmonary tuberculosis. In recent years laboratory men working with the blood of tuberculous patients have reached certain conclusions and have published much data on diagnosis and prognosis, but their work has only been partially accepted. As to the sputum, the morning specimen is best for examination, because during the night the bronchial secretions have accumulated while the patient has been sleeping and they are more apt to contain the bacilli. The small cheesy masses floating in the sputum should be used for the smear. Too much importance should not be attached to one, or even many negative examinations, especially in the face of other suggestive evidence. Where several specimens have been negative for acid fast bacilli by the direct method of examination, it is advisable to use the concentration process, as this will give a higher percentage of positive findings. The presence of tubercle bacilli in the sputum, of course, clinches the diagnosis and it is one of the most important of the six diagnostic factors, particularly when positive. No patient's life, however, should be sacrificed while waiting for a positive sputum when there is other evidence pointing to disease. Remember, that the earlier the diagnosis, the better the prognosis, and that only 8 per cent of the minimal cases[10] coming to this Sanatorium have bacilli in their sputum. Animal inoculation, with either sputum or fluid from wet pleurisy, has great value and should be used wherever practicable.

After a thorough study and correlation of the six factors mentioned, History, Symptoms, Physical Signs, X-ray, Tuberculin Test and Laboratory Tests, we come to the final analysis. In order for a definite diagnosis to be made, at least one of these points must be present. For convenience, they may be listed under four headings in the order of importance and called: Minimum Requirements for Diagnosis[2]—(a) the finding of tubercle bacilli in the sputum, with rare exceptions, is in itself diagnostic; (b) definite and persistent medium bubbling or mucous rales, heard with cough, or during inspiration following cough, in that part of the lung field located above the second rib in front or the body of the fourth dorsal vertebra behind; (c) demonstration on X-ray films of a definite parenchymatous lesion, located above the second rib in front or the body of the fourth dorsal vertebra behind: (d) pleurisy with effusion, or hemoptysis, not otherwise explained, justifies a provisional diagnosis and a careful study over a period of months or even years for further evidence of the disease.

Exclusion of Other Causes

We now come to the second part of the

paper and the consideration of the seventh point, "Exclusion of Other Causes." Many conditions may of course be confused with tuberculosis, but only the most common will be mentioned. They are: Lung abscess, bronchiectasis, lung tumors, fungus infection, pneumonoconiosis, nasal sinusitis, carious teeth and diseased gums, Malta fever, tularemia, toxic goiter and endocarditis.

Lung Abscess: Pulmonary abscess is usually a localized focus of infection within the lung substance, accompanied by suppuration and necrosis of the tissue. It should be differentiated, if possible, from suppurations confined within the lumen of the bronchial tree, such as bronchiectasis. In an abscess of long standing, multiple and extensive in character, there is usually some bronchiectasis associated with it. Also, in bronchiectasis of long standing, there is apt to be some pulmonary suppuration present.

The condition cannot be considered common and is perhaps on the decline. It is seen too often, however, and every possible precaution should be taken to further reduce the incidence. Marietta[7] reports 17 cases among a total of 10,570 patients admitted to Fort Sam Houston over a period of 28 months. Pincoffs[8] reports 34 cases of abscess of the lung among patients admitted to the two hospitals connected with the medical school of the University of Maryland over a period of 5 years. Crowe[9] reports no abscesses, following the removal of tonsils under general anaesthesia, among 3,500 cases at Johns Hopkins Hospital over a period of 12 years.

Lung abscess is always secondary; that is, with few exceptions where suppuration does occur primarily in the lung. Therefore, the exciting factor is the lodgment of infectious material at some point in the pulmonary tissue, or the implantation of certain pus-producing micro-organisms in areas where tissue resistance has already been lowered by disease, injury or circulatory disturbances. The causative factors have been variously classified by different authors. All seem to agree on at least one point, which perhaps ranks first, and that is the entrance of infection through the lumen of the bronchi, such as infections involving the respiratory mucosa (lobar pneumonia, bronchopneumonia, influenza, etc.), or infection through the aspiration route of foreign material, as following a tonsillectomy, the extraction of teeth, an operation on the nose, sinusitis, etc. Other causes are infected emboli from operations and a certain percentage of all cases must fall into the idiopathic class. The micro-organisms found, like the causes of abscess, are variable. Streptococci, staphylococci (especially aureus), pneumococci, influenza bacilli, Vincent's organisms and fungi have been reported. A mixed bacterial flora is common and, from a search of the literature, it would seem that the pus-producing cocci, particularly streptococci and staphylococci, are most commonly found.

Abscesses are classified as acute and chronic, singular and multiple, peripheral, central or mesial, and as being located in the right or left lung, upper or lower lobe, etc. The location has an important bearing on differential diagnosis and, while abscess may occur in the upper lobes, it is far more frequent in the lower lobes. Great care should be exercised and an application of the diagnostic yardstick made before calling a lesion in the upper lobe an abscess, especially above the second rib, regardless of the history of sudden rupture and expulsion of a quantity of pus following a tonsillectomy or the extraction of a tooth. A dormant tuberculous area may be and often is reactivated by some surgical procedure and made to look clinically like an abscess. (See Case No. 7.)

The symptoms and clinical picture will depend upon whether the abscess is acute or chronic, and whether it has ruptured through into a bronchus and is draining. The symptoms are usually essentially those of an acute pulmonary infection, with marked constitutional disturbance, and accompanied by profuse expectoration of fetid sputum. The fever ranges in active cases from 100 to 103 degrees F. Sweating and chills are present and these, like fever, are apt to become more pronounced during the periods of acute exacerbations when bronchial drainage has temporarily stopped. The cough varies in degree but is present in all cases. In the early stage it is non-productive but after the abscess ruptures it is paroxysmal in character and is accompanied by profuse expectoration which has a foul odor and a sickening taste to the patient. Blood streaks in the expectorated material are rather common but frank hemorrhage is rare, except occasionally at the time of the rupture of the abscess. However, two of Crowe's[9] dogs died

of hemoptysis six weeks after he had produced pulmonary abscess experimentally. Pain in the chest, according to Cole,[10] is an outstanding symptom and frequently the first to be noted. This will depend upon the location of the abscess and the amount of pleural involvement.

In the diagnosis the application of the yardstick is necessary to accurately determine the true status of the atypical cases and to differentiate them from tuberculosis. A detailed history as to the character of onset of the present condition, with special reference to the state of the patient's health previous to the present disease, must be taken. History of exposure to tuberculosis should have some weight and it is of course possible to have the two lesions coexisting, although it is believed to be rare. Clerf[11] says: "Abscess of the lung seldom accompanies tuberculosis. In but two cases observed at the Bronchoscopic Clinic was there found tuberculosis with pulmonary abscess." The location of the lesion, with tuberculosis usually in the upper lobe, and abscess usually in the lower lobe, as revealed by physical signs and X-ray, is of some help. There are no characteristic X-ray findings, but this aid is invaluable. In addition to stereoscopic films, lateral and oblique films may be helpful, as well as the use of the fluoroscope. A localized softened area with indefinite walls, with a fluid level in the center, which is surrounded by a zone of pneumonic consolidation, as revealed on the films, especially if located in the lower part of the lung field, should be considered an abscess. The physical signs are not very characteristic, only serving to show, as a rule, the presence of a localized area of involvement in the lung. There may be signs of scattered areas of consolidation and moisture, with a pleuritic friction rub. The rales, if present, are not the typical medium bubbling type heard in tuberculosis, but are more inclined to be musical in class, originating in the adjacent bronchi, with the "gurgling" type heard over the abscessed area. The sputum should be repeatedly examined for tubercle bacilli and, if practicable, the sputum cultured and animal inoculation done. Elastic fibers, pus and epithelial cells are commonly found microscopically. The blood picture in abscess, as differentiated from tuberculosis, is characteristic. In abscess there is polymorphonuclear leucocytosis which in the acute stages may reach 15,000 to 20,000, while in tuberculosis there is a leucopenia, with an increase in lymphocytes. Exceptions to this rule are in acute types of tuberculosis and in advanced cases where liquefaction and cavity formation are taking place. Then there may be a leucocytosis and an increase in polymorphonuclear cells the same as in an abscess. The tuberculin test may be given but a note of warning should be sounded as to the interpretation, since under normal conditions a majority of adults give a positive reaction. Also, if the patient is running fever, the test may be negative, even in the presence of clinical tuberculosis. Much has been said in the past few years in regard to bronchoscopy in the diagnosis and treatment of lung abscess. We believe that the use of the bronchoscope in tuberculosis is harmful. There is danger of hemorrhage and extension of the disease from its use. In the two cases reported herein where it was used, the disease spread, as revealed by the roentgenograms, and the sputum became positive for tubercle bacilli (cases 6 and 7). This is contrary to Clerf's[11] belief and he states that in a large group of tuberculous patients who were bronchoscoped no ill effects were noted. He does state further that in advanced cases, and where there is a tendency to hemoptysis, bronchoscopy is contraindicated. In abscess bronchoscopy is valuable and, after tuberculosis has been definitely excluded, its use will prove helpful in diagnosis.

Bronchiectasis: This condition, as stated above, may be very difficult or impossible to differentiate from abscess, due to its similarity, or the two may coexist. The onset of bronchiectasis is more gradual and the septic manifestations are fewer. The sputum is abundant and is apt to be foul. The cough and expectoration are marked and are affected by change in posture. These patients usually have little or no fever and the blood picture is within the normal range (absence of leucocytosis). The causes for the bronchial dilatations have been variously stated. These range from obstruction to the bronchial lumen by foreign bodies, tumors, viscid mucous plugs and pressure from enlarged lymph nodes, to chronic infections located in the bronchi and in the upper respiratory tract, such as chronic nasal sinusitis, etc. All cases of suspected bronchiectasis should have the nose and throat examined for infection and, if necessary, the accessory nasal

sinuses X-rayed, as this is the most common source of chronic non-tuberculous pulmonary infections.

The history may be that of a very chronic disease, often beginning in early childhood with symptoms of only moderate severity, extending over many years and perhaps never reaching the point of producing complete invalidism. The physical signs are those of a low-grade chronic infection located in the root regions and the bases of the lungs. The breathing may be poor, and large bronchial rales are heard, both during normal breathing and on inspiration following expiration and cough. The physical signs in the apices are within the limits of normal. The X-ray shows a chronic basal infection, with dilated bronchi often appearing on the films as "ringlets." The physical and X-ray findings, basal in location, and repeatedly negative sputum examinations for acid fast bacilli, will enable one to exclude tuberculosis with a fair degree of accuracy. Then the introduction of iodized oil into the bronchi, followed by X-ray films which show dilatations of the bronchi filled with opaque oil, appearing as "clubbing," complete the diagnosis of bronchiectasis. The symptoms, etc., may suggest bronchiectasis but the only definite means of making an accurate diagnosis is by X-ray films following the introduction of iodized oil.

Nasal Sinusitis, Carious Teeth and Diseased Gums: Sinus infection, in recent years, has become a common ailment of mankind. Prior to this it no doubt was equally as prevalent, but the profession had not recognized it, and it was masquerading under the title of "catarrh of the nose and throat." The causes of this disease have been listed by Martin and Dickinson[12] as follows: (1) infectious; (2) nutritional and metabolic; (3) allergic; (4) mechanical. Since infectious sinusitis predominates, it is the only form which will be considered here. Common "colds," influenza and the acute infectious diseases, such as measles, whooping cough and scarlet fever, produce an acute inflammation of the upper respiratory tract, and this extends from the nose into the accessory sinuses, where it may become chronic and eventually produce a pansinusitis. Such a condition may take place in early childhood, remain through the period of adolescence and into adult life, causing frequent attacks of "head colds" which are followed by "bronchial attacks," being worse in winter than in summer. In this way a "chronic bronchitis" develops, which is potentially a bronchiectasis. These cases commonly develop acute ear infections in childhood and after many attacks they pass into a state of chronicity in adult life, with permanent impairment of the hearing. As to the mode of extension of this infection from the sinuses into the lungs, two theories have been advanced, one by the lymph stream route, and the other by direct aspiration through the air passages. The latter route seems to be most plausible. The diagnosis and differentiation from tuberculosis depend upon physical examination, X-ray findings, history and sputum examination. The sputum is negative for acid fast bacilli; the symptoms are mild as compared to tuberculosis; hemoptysis is rare and fever, if present, will be slight, with an absence of the characteristic afternoon rise in tuberculosis. The physical signs show nothing except numerous musical rales, beginning in the root regions of the lungs and extending into the bases, and are essentially those of a low-grade chronic bronchitis. The X-ray findings are either absent, or show only widened root shadows, with some thickening of trunks, especially in the lower lobes. The heavy beaded and interwoven trunks in the apices or the appearance of a "fan," suggestive of early tuberculosis, are absent.

Carious teeth and diseased gums are common causes of lung infections, such as bronchitis, bronchiectasis and abscess. Crowe[9] took fresh scrapings from the mouths of patients having pyorrhea cavities and introduced them into the bronchial passage of dogs, and produced abscess. Chronically inflamed tonsils may, by aspiration of the infection into the lungs, also cause bronchitis. We often see this condition in our patients at the Sanatorium, especially in the children. To prove that this is the cause, following a tonsillectomy the pulmonary infection entirely disappears.

Tumors: Not until one attempts to review the literature on neoplasms of the lungs does he realize how voluminous it is and the mass of contradictory and confusing statements made by various authors. The incidence is not believed to be any higher, but closer study of the cases and better means of diagnosis are probably responsible for the recent increase in articles on the subject, with report of cases. The chief interest seems to center on malignant tumors, especially carcinoma, and, according to the literature, they are more prevalent, but

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this brief discussion will deal with all forms. New growths of the lungs may be classified as benign and malignant; primary and metastatic; and, as to location, endo-bronchial, intralobar, mediastinal, pleural, and in the ribs, with extension to the lungs. As to the cause, no one of course knows, but many theories have been advanced, such as previous irritation, as from a chronic inflammation of the bronchial mucosa produced by diseases such as influenza, chronic bronchitis, bronchiectasis, atelectasis and tuberculosis. Also, the non-disease irritants listed are inhalation of dust from tarred roads, radio-active dust in miners, and stone-masons. Many authors have tried to prove that carcinoma and tuberculosis do not coexist but the belief is erroneous and without proved facts. Von Glohn,[13] from the department of pathology, College of Physicians and Surgeons, Columbia, reports two cases that went to autopsy who had primary carcinoma engrafted in old tuberculous foci. Miller and Jones,[14] of Bellevue Hospital, reported on 32 cases of primary carcinoma of the lungs, which went to autopsy, and they also believe they coexist. The incidence as to sex and age varies. Miller and Jones found it 3 times more frequent in men than in women, and their ages ran from 25 to 70 years, with an average of 49 years.

Symptoms and Diagnosis: The onset is insidious. The local symptoms are apt to be equally as pronounced as those in tuberculosis but the constitutional symptoms are decidedly less. Cough is present in nearly all cases but expectoration is slight, unless the tumor is under going degeneration, when it will be profuse and perhaps foul-smelling. Hemoptysis is not as common as it is in tuberculosis but it is frequently noted in the latter stages. Pain in the chest is in proportion to the amount of pleural involvement and will be present some time during the course of the disease. Loss of weight, weakness, anorexia, fever, clubbed fingers and cachexia will make their appearance in due time. The physical signs will depend upon the size of the tumor, the location and the stage of advancement, but usually they will be either absent or those of some bronchial irritation, as bronchitis. Pleurisy, either with or without effusion, is not uncommon, especially if the tumor is intralobar or pleuritic in location, and when accompanied by fluid, if blood-tinged, is said to favor malignancy. Dunham, of Cincinnati, believes that, in the fluid cases, to remove the fluid and centrifuge it at high speed, and to examine the sediment microscopically, will often show cancer cells. If any sputum is present, it should be examined for acid fast organisms. The age of the patient must be considered and a thorough search made for malignancy elsewhere in the body, as metastasis to the lungs may take place. The two most important aids in the diagnosis of this condition, after all, are X-ray and bronchoscopy. Serial X-ray films may be necessary in order to note changes in the size and general appearance of the opacity in question, and radiograms from different positions should also be made. The bronchoscope is invaluable and should be used wherever accessible. The case of endobronchial carcinoma reported here (case No. 10) could not possibly have been diagnosed except by the use of the bronchoscope and, through it, the section removed for microscopic examination.

Toxic Goitre: The differentiation of toxic goitre and early pulmonary tuberculosis has long been considered a difficult problem; perhaps not so much today as it has been in the past, due to laboratory developments in the line of basal metabolism instruments and modern X-ray equipment. Stewart Roberts[15] says: "Let a young individual, especially a woman of eighteen to thirty present herself for examination, with a visible thyroid, or one lobe easily palpable, a rapid pulse, a slight fever, a history of lassitude and weakness, and easy perspiration, and one's diagnostic mind faces action and decision." Add to this picture increased metabolic rate, tremor, Rosenbach's sign of a coarse tremor of the upper lids when the eyes were closed, easily excitable heart, with acceleration and palpitation, negative physical signs and negative X-ray findings of the chest, and the diagnosis of hyperthyroidism is complete. Roberts believes that blood pressure readings are helpful and states that in tuberculosis the pulse pressure is apt to fall to below 40; whereas, in goitre, there is a large cardiac output associated with the increased metabolism and the pulse pressure is increased up to 60 or more points. After all, the final conclusion in differential diagnosis will depend upon the X-ray of the chest, basal metabolism test, history and symptoms of the case.

Malta or Undulant Fever: This condition

has been fairly prevalent in this locality for the last few years and its diagnosis is occasionally confused with that of early tuberculosis, which explains why it is included. The onset of Malta fever is gradual and the outstanding symptom is fever without an apparent cause, simulating not only miliary tuberculosis but typhoid. The fever often goes as high as 103 degrees and 104 degrees F. and a noticeable factor is the tendency to decline, only to be followed within a few days by another rise, with a relapse. "Indigestion," headache and joint pain are present. In severe cases the spleen is enlarged and the lungs are apt to be congested, showing patches of consolidation and perhaps pleurisy with effusion. The disease may be contracted in various ways. The most common in this country is by drinking milk from infected cows or goats. Some claim that infected hogs are the source of many cases. The positive points in diagnosis are the agglutination test and cultures.

Tularemia: With the recent advances in our knowledge of tularemia, it has been noted that its pulmonary manifestations may simulate tuberculosis. This is not surprising when it is recalled that focal necrosis is the fundamental pathologic lesion in both diseases. Pleural effusion, pulmonary consolidation, pulmonary cavitation and bronchitis have been reported in cases of tularemia. Blackford,[16] of the University of Virginia Hospital, reported 13 cases of tularemia and stated that 6 of that number had manifestations referable to the chest, which caused difficulty in differential diagnosis. One case Blackford had (personal communication), not included in the above list, died and went to autopsy. There was found extensive pulmonary damage due to multiple pulmonic thrombi, with attending areas of necrosis probably attributable to the tularemia infection and believed to be of prime importance as a cause of death. Physical and X-ray signs of this condition, where there are pulmonary manifestations, may and often do simulate tuberculosis but the agglutination tests will differentiate it. That relatively few cases of tularemia are mistaken for tuberculosis is shown by the work of Dr. G. Foard McGinnes, of the Virginia State Department of Health, who tested the sera for tularemia of 115 non-proven tuberculous suspects in the State sanatoria and did not find a positive agglutination among them.

Pneumonoconiosis: A combination of fibrosis and pigmentation of the lungs, due to the inhalation of minute particles of dust, is known as pneumonoconiosis and often called miners' phthisis. The constant inhalation of the irritating dust particles causes lymph stasis and provokes proliferation of the connective tissue elements, eventually resulting in fibrous overgrowth and an indurated mass of the entire lung tissue. There are several different types, due to the kind of dust inhaled, such as: anthracosis, from coal dust; siderosis, from the inhalation of fine particles of metal—iron and steel; silicosis, from sand; kaolinosis, from plastic clay-workers. As a result of some resent work done on miners in South Africa, it was found that the pulmonary fibrosis was due largely to the associated silica dust. Pancoast and Pendergrass[17] are of the opinion that the inhalation of silica dust in mining is responsible for practically all lung fibrosis, or miners' phthisis, even in those working in coal mines, and they suggest that the term "silicosis" be used.

The amount of dust to which the workers are exposed in these dust trades and the length of time in years seem to be the two factors which will determine the development of the disease. The installation of modern mining machinery has caused an increase of the dust hazard. It has been found that those who operate pneumatic drills and are working in a fog of dust all day long will develop severe lung changes within 4 or 5 years, while those less exposed to the dust will go for from 10 to 12 years before disability begins. This condition, according to the extent of pulmonary changes, i. e., fibrosis and the degree of disability, has been classified into three stages—one, two and three. In stage one there are only slight pulmonary changes. These are confined mostly to the root zones of the lungs, cause no symptoms worthy of note and are recognized only by an X-ray of the chest. In stages two and three there is more marked fibrosis, with definite impairment of the general condition, and disability. Especially is the latter noted in the third stage.

The subject of pneumonoconiosis and tuberculosis being closely allied has brought forth much discussion. At one time pneumonoconiosis in its advanced stage was regarded as tuberculosis. More recently it has been thought by some, whose work has been limited to certain

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dust industries, that the condition protected the individual, in a measure, against the development of tuberculosis. Be that as it may, the fact remains that a large number of people with advanced pneumonoconiosis continue to develop tuberculosis as a terminal stage disease. It may be that the disabling effects of pneumonoconiosis, plus poor hygienic surroundings, produce a fertile field for the development of tuberculosis.

The symptoms will depend upon the stage of the disease but dyspnoea seems to be the first noted and increases in severity as fibrosis advances, finally becoming urgent over a period of years and causing disability. There may be a loss of weight but, as a usual thing, the patients look well until the latter stages. Cough is moderate, with slight expectoration, and a wheeze, not unlike asthma, often develops in the terminal stage. Pleurisy pain is almost always present over the pulmonary bases. The physical signs are usually slight and by no means indicate the extent of pulmonary impairment, X-ray films being necessary for this. There is limitation of expansion over one or both sides. Slight impairment on percussion is the rule over the root zones and the upper lobes, with distant breath sounds. Rales, if present, are apt to be the fine moist type over the upper lobes, and the musical kind heard over the root zones and bases. A basal pleurisy rub is not uncommon.

As to the diagnosis, there are three points which should be considered where pneumonoconiosis is suspected and if they are present they will usually greatly assist in reaching a conclusion. They are: (a) dyspnoea, which is the chief complaint and out of proportion in severity to the other symptoms; (b) history of having worked in the mines and having been subjected to the inhalation of excessive dust for a period of several years; (c) positive X-ray findings. It is the latter point which will not only reveal the disease but will show the extent of it. In the first stage only heavy root shadows, with thickened trunks, are seen on the films; but as the disease continues there appear along the course of these heavy trunks, extending from within outward, small, uniform, symmetrically arranged, mottled areas ranging in size from a pinhead to a pea, being due to small, fibrotic nodules. This is the second stage and at this point some one, due to the distribution of the disease extending off from the hilum into the lung field, has drawn an analogy to that of a bat with its wings spread, hence the term "bat-wing" distribution. The mottling is apt to be more noticeable in the right lung, due to a greater portion of the inhaled dust going into this side. Fibrosis continues, the mottled areas get larger and coalesce into zones of consolidation extending both upward and downward, eventually involving the greater part of the lungs and obstructing the excursion of the diaphragm by pleuritic adhesions. This, of course, is the third stage. One interesting feature of this disease is that when once well established the fibrosis continues throughout the lung, eventually leading to disability even though the miner quits this dusty trade and takes up another occupation. With a disease-producing pulmonary pathology, such as pneumonoconiosis, it is of course difficult, especially in the third stage, to differentiate from tuberculosis. The problem is more difficult when we consider that the two often coexist in the terminal stage. Repeated sputum examinations for tubercle bacilli, history and occupation, and thorough study of the X-ray films should prove the deciding points.

Fungus Infection: Fungus infections of the lungs have probably been overlooked many times up until recent years, although Castellani[18] described this condition in Ceylon in 1905. Since then much work has been done on this infection. There is no doubt that nonpathogenic fungi exist in the mouth and throat of some individuals and also in old bronchiectatic cavities and advanced tuberculous lesions where desirable culture media are present; hence, care must be taken in cleansing the mouth thoroughly in all cases before collecting specimens. When infection is found, direct and concentrated examination of sputum for tubercle bacilli should be done and animal inoculation experiments carried out in order to determine the pathogenicity of the fungus. In our routine examination of specimens of sputum at the Sanatorium, several cases have been found which showed constantly present yeast-like organisms. These organisms were present chiefly in free budding forms, but mycelial threads were also found in the direct smears. A rich growth was obtained on Sabouraud's media and simple dextrose agar. The organism grown on agar produced chiefly budding forms but, on gelatin stab cultures, produced an abundance of branching septate filaments and

the oval forms (conidia). These organisms conform to the description of the fungus of the genus Monilia, of which there are many species.

Fungus has been found constantly in the sputum of three of our cases who failed to show tubercle bacilli after repeated direct and concentrated sputum examinations (see case No. 12). The physical signs and the X-ray findings are usually slight, showing a perference for the lower part of the lungs. There may be pleural and scattered moist rales, and the X-ray reveals heavy trunks and perhaps mottling and light consolidation. These cases are being studied as possible cases of broncho-moniliasis. It is understood that the isolation of fungi from sputum is, of course, no proof that they have produced the clinical condition of broncho-moniliasis. However, repeated absence of tubercle bacilli and other organisms suggests etiologic relationship. Careful clinical study of cases and animal inoculation to determine pathogenicity of the fungus is necessary to reach a decision as to the presence of this disease. Animal experimentation with fungus from cases of broncho-moniliasis are said to show tubercles resembling those produced by the tubercle bacillus, but with the fungus present instead of tubercle bacilli. Cases of broncho-moniliasis, because of their similarity of history and clinical course to that of pulmonary tuberculosis, are apt to come under our observation. The symptoms vary but usually are milder than those seen in tuberculosis. A number of interesting cases have already been reported. Castellani[18] first reported the condition in Ceylon in 1905. Stokes, Kiser and Smith[19] reported two cases of bronchomycosis in 1930, in which there was extensive chronic interstitial fibrosis of the lungs. Tubercle bacilli were not demonstrated in the sputum but a form of yeast was found which showed morphological and cultural characteristics resembling Monilia albicans. The pathogenicity of this fungus was determined by animal inoculation. Shaw[20] reported, in December, 1930, a case of broncho-moniliasis which had been diagnosed tuberculosis from the X-ray and physical findings. He could not find tubercle bacilli either by sputum examination or by guinea pig inoculation. The sputum did show, however, small, firm, white granules and yeast-like bodies which, when planted on maltose agar, produce monilia in isolated form.

Endocarditis: Of the heart diseases apt to be confused with tuberculosis, subacute bacterial endocarditis and mitral stenosis are the most common. The former not infrequently presents a low-grade fever in its early stages. This is the chief reason for its confusion with tuberculosis. However, the occurrence of emboli, the enlarged spleen and the progressive anemia soon indicate the nature of the disease. More important than these is the fact that bacterial endocarditis almost invariably occurs on old chronic valvular heart disease, and may be readily diagnosed by accurate physical examination.

Hemoptysis takes place often enough in mitral stenosis to cause confusion with the blood-spitting of tuberculosis. Generally, the hemorrhage from mitral stenosis comes about after violent exercise or with heart failure. Seldom should the examination fail to detect a mitral stenosis sufficient to produce hemoptysis. With the discovery of mitral obstruction, considerable evidence is necessary to prove that pulmonary hemorrhage is of tuberculous origin, but we do know now that tuberculosis and mitral stenosis may be seen together, and that it is possible for one patient to have both conditions.

A few cases are included here, with a brief summary of the histories, which illustrate common errors in diagnosis. Had there been a thorough application of all of the seven diagnostic points as listed above, the mistakes probably would not have been made.

CASE 1: J. N. B.; age 25; occupation, auditor. Family history negative; usual diseases of childhood; no other diseases of any importance. Only history of exposure was that he was intimately associated at work with a bookkeeper who died from tuberculosis in 1929. *Present illness:* In the early summer of 1930 he noticed that he tired easily and was losing some weight, and on account of these symptoms he went to a consultation clinic for a complete physical examination. His chest was considered negative at that time and he was told that he had some diseased tonsils which he should have removed. One month following this (July, 1930), on arising one morning he began to cough and expectorated about three drams of blood. This was followed, within about an hour, with another small hemorrhage. Thinking that this blood was coming from his throat, he went to a specialist for a tonsillectomy, and the specialist referred him to this Sanatorium for an examination. Chest examination at that time showed nothing of importance except some poor breathing in the upper lobe of the right lung. X-ray, however, showed consolidation and honeycombing between the second rib and fourth rib on the right, and a diagnosis of tuberculosis was made. He was admitted to Blue Ridge Sanatorium a few days later and for some time continued to expectorate a small amount of blood.

Laboratory tests: Sputum examinations negative for tubercle bacilli, but patient had very little ex-

pectoration and specimens obtained were not satisfactory; blood, urine and feces were negative.

Remarks: There was nothing of diagnostic importance in this case except the X-ray findings. The physical examination was practically within the limits of normal but had this case been X-rayed earlier a diagnosis would have been made. Two of the outstanding points in the case, either one of which would have justified a diagnosis, were hemoptysis and parenchymatous X-ray lesion in the upper portion of the lung.

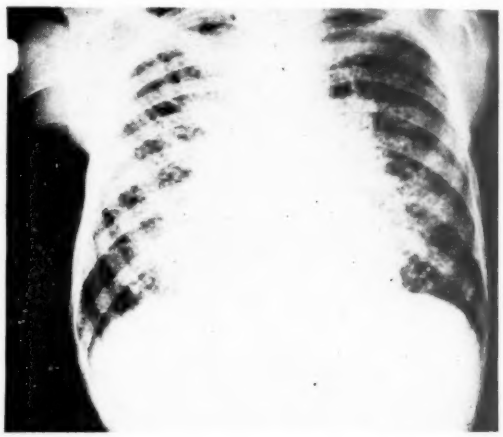
CASE 2: Mrs. L. B. T.; age 36; occupation, housewife. Admitted to Blue Ridge Sanatorium April 8, 1931. *Family history:* Mother and one sister died from tuberculosis. *Past history:* Was rather delicate child and recovered slowly from the usual diseases of childhood. Had had repeated attacks of bronchitis since age of 14. *Present illness:* In 1919, while in a poor condition generally, she developed a "deep cold" and following this had a small hemorrhage. She was sent to a tuberculosis institution in another state but remained there only a short while, as they could not get sufficient evidence in the case to justify a diagnosis of clinical tuberculosis. When she came to this Sanatorium, the physical examination of the chest and the X-ray findings were considered normal; but the positive factors in her history could not be ignored and it was thought advisable to observe the case for awhile. She insisted that she had no expectoration but on closely observing her it was found that she had some small cheesy masses in her sputum and repeated examinations of these revealed that they contained tubercle bacilli. After remaining here awhile she developed some symptoms referable to the abdomen, which were suggestive of tuberculous enteritis. Examination of her stools on several occasions revealed acid fast bacilli.

Remarks: The important points in this case are the history and laboratory tests which were the factors that enabled the diagnosis to be made, the physical and X-ray examinations being negative. The patient undoubtedly has clinical pulmonary tuberculosis and perhaps a tuberculous enteritis as a complication. Had the history not been gone into thoroughly and the sputum repeatedly studied for acid fast bacilli, the case might not have been diagnosed.

CASE 3: Miss N. E. F.; age 25; occupation, teacher. *Family history* negative. No known exposure to tuberculosis. *Past history* negative. Patient was admitted to Sanatorium March 5, 1929. *Present illness:* Four years ago, while at college, was playing hockey and was seized with sharp pains in the lumbar region of the back. She was thought to have a strain and was treated for such, but the pain continued and she began to lose weight and get in a generally run-down condition. Her family physician could find nothing in her chest but finally succeeded in getting a specimen of sputum for examination. This was reported as containing tubercle bacilli. She was sent to the Sanatorium with a diagnosis of tuberculosis. Physical signs over her chest were well within the limits of normal and the X-ray showed nothing except some small calcium deposits scattered throughout both root zones. The diagnosis of tuberculosis, which had been previously made by the family physician, was doubted, but the case was kept under observation and it was not until several weeks later that we could get a specimen of sputum for examination. This, like the above case, had some small, dark, cheesy masses floating in what appeared to be saliva. These were examined and repeatedly showed tubercle bacilli Her X-ray films were sent to Dr. Morris McPhedran, of Philadelphia, who located a small calcified mass, surrounded by a delicate zone of fuzzing, in the peripheral zone of the lung field on the right, which he believed was responsible for the positive sputum.

Remarks: This case was interesting because, as in case 2, the diagnosis was doubted for the reason that the physical and X-ray were apparently negative, and there were no points in the history that we considered of any significance. But the sputum examination enabled us to confirm the diagnosis which had been made by the family physician before the patient was sent to the Sanatorium.

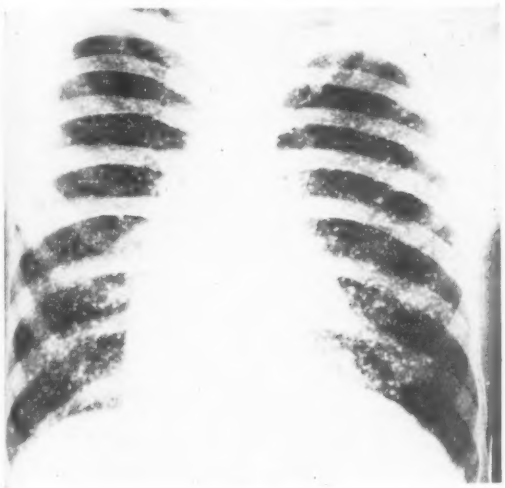
CASE 4: C. W.; age 15; occupation, student. Admitted to the Sanatorium February 7, 1929. *Family history* negative from standpoint of contact with tuberculosis. *Past history:* Usual diseases of childhood, with good recovery. *Present illness:* Parents noted child's general condition was not as good as it should be, that he was not gaining weight and that he was beginning to fail in school. Periodical routine rest periods and forced feeding did not seem to cause any change in his condition. He was sent to a clinic, where a complete physical examination, including laboratory tests, was made. (X-ray examination of the chest was omitted.) Nothing could be ascertained by the clinic except the boy was much underweight and in a poor condition generally. Soon after this he developed some skin lesions on his back and shoulders, which gradually grew in size and number. He was taken to a surgeon, who did a biopsy on one of these lesions, and the microscopic report was that it was tuberculous. *The X-ray report* of the chest at that time was "Both lungs, from top to bottom, are studded with innumerable tubercles. These are more or less uniformly distributed. Diagnosis miliary tuberculosis." *The physical examination* revealed nothing of importance except a little poor breathing over the upper lobes of both lungs. *Laboratory tests:* Sputum examinations were negative all the way through in this case, but the specimens obtained have been poor. They contained nothing, from what we could determine, but saliva. Blood and stool examinations were normal, but the urine showed, in addition to blood and pus cells, acid fast bacilli. The abdominal examination revealed an enlarged liver, a palpable spleen and some generalized tenderness in the lower abdomen.



Case No. 4.—Miliary tuberculosis. Note the myriads of tubercles throughout both lungs and the uniform distribution of them.

Remarks: It should be remembered that in a case of miliary tuberculosis, especially which is blood and lymph-borne, the tubercles are interalveolar in location at first and that usually no rales can be heard or bacilli found in the sputum until they rupture through into the air passages and produce exudation of the alveoli and small bronchi. This condition accounts for the absence of moisture and the negative sputum but, in this case, the X-ray was positive and revealed the only definite means of an accurate diagnosis. This case has not only pulmonary miliary tuberculosis, but generalized miliary as well. The acid fast bacilli in the urine indicated a lesion somewhere in the genito-urinary tract, and the enlarged liver and spleen would point to lesions in these organs.

CASE 5: F. A. H.; age 42; occupation, painter. Admitted to the Sanatorium June 12, 1925. *Family history:* One brother died from tuberculosis in 1918. *Past history:* Six attacks of influenza between 1918 and 1925. Had pleurisy in 1905. *Present illness:* Patient had recently quit painting and gone to work for the railroad company, and this had subjected him to excessive irritating dusts by cleaning the inside



Case No. 5.—Calcified miliary tuberculosis. Was first diagnosed siderosis due to general appearance on the films and the occupation of the patient.

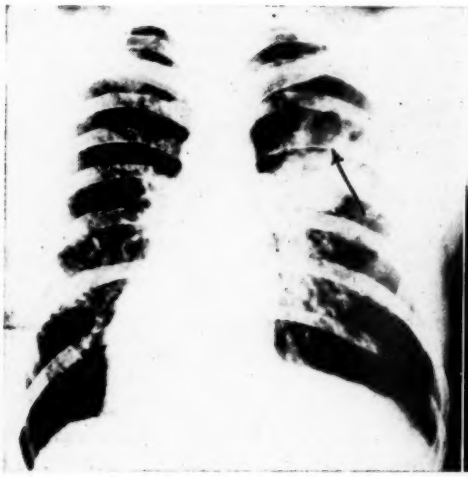
of water-tanks after they had been drained of the water and allowed to dry. His duty was to thoroughly clean these tanks on the inside and then paint them. Soon after beginning this work, he developed a cough which was made worse by the excessive dust to which he was subjected at this new work. This was followed by fatigue, shortness of breath, loss of weight and strength. *Laboratory tests:* Sputum was repeatedly negative for tubercle bacilli. *Physical examination* was normal, except for some harsh breathing and increased voice conduction in the root regions of both lungs. No rales could be heard. *X-ray examination* was as follows: "Both lungs show, uniformly distributed throughout, sharply defined, discrete, minute, dense, shotlike areas which are more numerous in the bases. This condition is believed to be siderosis."

Remarks: This case is very interesting from the X-ray standpoint. We were too eager and anxious to make a diagnosis of siderosis, without thoroughly studying the patient's history. After seeing the X-ray pictures, which contained these numerous dense shotlike areas, and knowing that the man had been subjected to the inhalation of excessive dust from iron rust, we assumed that we were dealing with a case of siderosis and sent these films to Dr. Kennan Dunham, of Cincinnati. He frankly informed us that this was a case of calcified miliary tuberculosis and stated that it was the third that he had seen, and if we would go further into the history we would probably get information that would confirm his diagnosis. The patient was anxious to get compensation from the railroad and denied, for some time, that he had had anything but pleurisy in 1905, but finally admitted that his case had been diagnosed as tuberculosis at the University of Pennsylvania, while he was working on a street car in Philadelphia. Again, it was the X-ray films that enabled a true diagnosis of tuberculosis to be made. The physical examination and sputum tests were of no definite value. The history, of course, produced corroborative evidence when the true facts were once brought out.

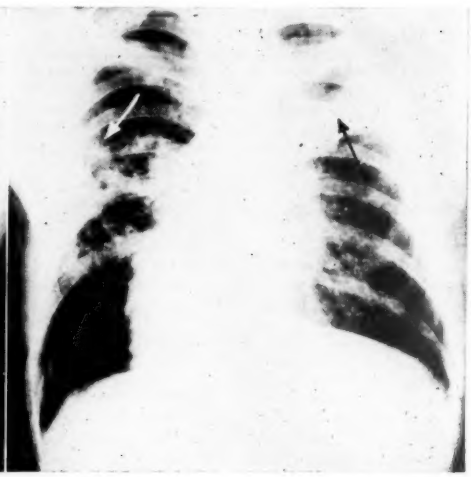
CASE 6: S. C. E; age 25; occupation, farmer and hotel worker. Admitted to Sanatorium February 28, 1930. *Family history* negative insofar as known exposure to tuberculosis was concerned. One uncle died from tuberculosis during the patient's childhood but there had been no contact. *Present illness:* In June, 1929, he developed pain in the right chest. Following this he developed cough and expectoration, loss of weight, loss of strength and an afternoon fever. On consulting his family physician he was sent to the roentgenologist for films of the chest and the diagnosis was lung abscess, with cavity formation in the upper lobe of the right lung. The patient was then referred to the Chevalier Jackson Clinic in Philadelphia, where numerous bronchoscopic examinations were made. Following one of these the sputum was found to contain tubercle bacilli. He was then sent back home, with a diagnosis of tuberculosis, and his family physician sent him to Blue Ridge Sanatorium. At the time of admission he was found to have signs of extensive tuberculosis throughout the greater part of the right lung, with cavity formation in the apex, and infiltration in the upper lobe of the left lung. *X-ray examination* confirmed physical signs and the sputum examination was repeatedly positive for tubercle bacilli. Patient showed no definite improvement and died from a spontaneous pneumothorax of the right lung in October, 1930, eight months following admission.

Remarks: The photographs of the X-ray films here included show the condition of the chest when the diagnosis of lung abscess was made, and the second picture is after he had had numerous bronchoscopic treatments and had been sent to the Sanatorium for treatment. In the case of the first films, there is a definite parenchymatous lesion, located in the apex of the lung, which had gone to the point of cavity formation. A lung abscess occasionally occurs in this region of the lung, but is far more common in the lower part. Frequent use of the bronchoscope may have been responsible for the extension of the disease in the opposite lung.

CASE 7: G. M.; age 28; occupation, sales manager. Admitted to Sanatorium May 25, 1931. *Family history:* No history of exposure to tuberculosis, either in the family or otherwise. *Past history:* Nothing of importance except he had persistent sinus trouble during childhood. *Present illness:* Patient noted, in the latter half of 1930, that he was losing some



Case No. 6-A.—Films taken when the diagnosis of lung abscess was made and before any bronchoscopic treatments were given. Note consolidation and softening in right upper lobe.



Case No. 6-B.—Films taken after several bronchoscopic treatments and after tubercle bacilli had been found in the sputum. There has been a marked extension of the disease in the right upper, with a large thick-walled cavity now present. Also, a lesion, with consolidation and cavity formation, has developed in the third interspace on the left.

weight and became unduly tired on exertion; also, that a slight cough had developed. Cough gradually increased until in March, 1931, he consulted an eye, ear, nose and throat specialist, who, on examination of the larynx, found a small mass on the epiglottis and attributed the cough to this. He removed this from the epiglottis and in about two or three days the patient had two fair sized hemorrhages. Lung abscess was thought of as the probable cause and patient was sent to a roentgenologist for films of the chest. As may be seen from the photograph of the chest film here included, there was a consolidated area just off the root zone in the right lung which was diagnosed as an abscess. He was sent to the Jackson Clinic, in Philadelphia, where he had fifteen bronchoscopic treatments before the sputum was found to contain tubercle bacilli. At the time of admission to this Sanatorium he had a definite extension of the lesion in the right lung, as can be seen from the photograph of the second films. There was greater involvement of the lung space and an area of softening had taken place incident to cavity formation. *Physical signs* revealed an extensive involvement of the right lung from the clavicle to the base. *The X-ray interpretation* at that time was as follows: "There is an extensive tuberculous process occupying that part of the lung field below the clavicle, with consolidation and beginning cavity formation in the region of the second and third ribs. The left lung is about normal." Sputum examinations repeatedly showed the presence of tubercle bacilli. At the time of admission the patient was running fever of 103° and had marked anorexia. Pneumothorax was immediately started and at present the right lung is in a good state of collapse. The patient is rapidly improving.

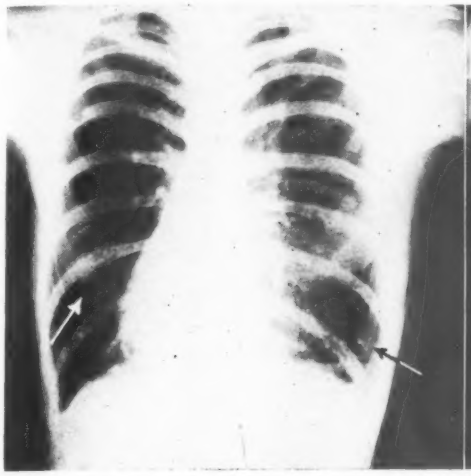
Remarks: In the case of frank hemorrhages, like this patient had, the first consideration should be given to tuberculosis as the probable cause. A lung abscess may cause a hemorrhage but it is certainly not as common a cause as tuberculosis. The X-ray lesion was parenchymatous in character but its location was a little atypical for tuberculosis. In this case and in Case 6, the bronchoscope did not help the patient any.

CASE 8: Mrs. E. B. G ; age 26; occupation, housewife. Admitted to Sanatorium September 16, 1930. *Family history:* No known exposure to or contact with tuberculosis. *Present illness:* In June, 1930, patient developed pleurisy in the right side, which was followed by hoarseness, cough and expectoration, and fever of 101. Pleurisy subsided but the other symptoms continued, until in August the family physician became suspicious of the case and made application for the patient to be admitted to this Sanatorium for observation. At the time of admission, September 16, 1930, *physical examination* revealed nothing except harsh breathing and increased voice conduction in the root region of the right lung and extending downward into the base. Definite medium bubbling rales were heard after cough over this area, both in front and behind. The upper lobes of the lungs seemed to be normal, so far as *physical signs* were concerned. *X-ray report* at that time was as follows: "Right lung: In the root region and lower lobe there is an exudative process which has gone to the point of consolidation, with slight cavity formation. This is believed to be either tuberculosis or a lung abscess, with a preference for the latter." Repeated sputum examinations finally revealed the presence of tubercle bacilli. The case was then diagnosed as tuberculosis and pneumothorax treatment instituted. No difficulty was experienced in collapsing the lung.

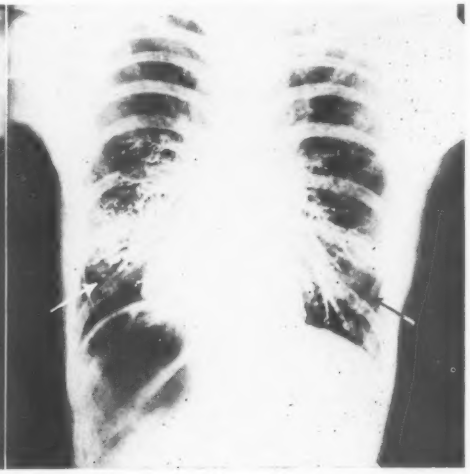
Remarks: A lesion located in the root and base of the lung, as this one was, is more apt to be some other infection rather than tuberculosis, but persistent sputum examinations revealed acid fast bacilli and this was practically the only means of making an accurate diagnosis.

CASE 9: Mrs. W. C. N.; age 39; housewife. Admitted to Sanatorium July 17, 1929. *Family history:* Negative so far as any known exposure to tuberculosis was concerned. *Past history:* The most essential factors in this are that patient was subject to

frequent "colds" and attacks of influenza and treated often for bronchitis and sinusitis. *Present illness:* The "sinus" and "bronchial trouble" gradually increased until in January, 1929, she expectorated a small amount of blood, and following this she developed a pain in the left side. She later noticed fatigue on exertion and loss of weight and strength. The family physician diagnosed her case as tuberculosis and sent her to the Sanatorium. At the time of admisson she had, on the *physical examination*, numerous musical rales over the lower two-thirds of both lungs, being more marked in the left. *The X-ray* (no photograph of films here included), revealed a chronic inflammatory process in the lower lobes of the lungs, with a definite tendency to "ringlet" formation in the left. A pansinusitis was found by our consulting specialist on an examnation of her nose. *The laboratory tests* were negative, including the examination of numerous specimens of sputum for tubercle bacilli. This case was suspected of having bronchiectasis and an intratracheal injection of lipiodol was done. The films taken following this showed definite clubbing of the bronchial tree in both lower lobes, especially the left, which confirmed the diagnosis of bronchiectasis.



Case No. 9-A.—Bronchiectasis. The upper lobes are about normal but in the bases there is a chronic inflammatory process with "ringlets" in the right.



Case No. 9-B.—After intratracheal injection of lipiodol. There is moderate "clubbing" of the terminal bronchi, especially on the right, which represents the bronchiectatic areas.

Remarks: Considering the symptoms which the patient had, the case could easily have been diagnosed tuberculosis, but the other factors, namely, physical signs and X-ray, pointed to a chronic inflammatory process of some other nature involving the bases of the lungs. When repeated sputum examinations had been negative and we had, with a fair degree of accuracy, elimited tuberculosis, we felt justified in injecting the lipiodol, which proved the true means of establishing a diagnosis.

CASE 10: J. D. S.; age 46; occupation, baker. Admitted to Sanatorium May 22, 1930. *Family history:* Father died from tuberculosis at age of 42. *Past history:* Nothing of importance except a history of having been treated for sinusitis during his young adult period and having had pneumonia in 1923. *Present illness:* Since the pneumonic attack in 1923, the patient had been subject to "colds" and "bronchial infection." In March, 1930, he noted some fatigue on exertion and began to run a low-grade fever. His physician diagnosed his case as tuberculosis and sent him to the Sanatorium. *Physical signs* at the time of admission revealed nothing in the chest except numerous musical rales in the right lung, extending from the second rib to the base, both in front and behind. *The X-ray films* of the chest taken at that time revealed nothing of importance and, from this standpoint, the chest was believed to be within the limits of normal. Patient had a little frothy mucous expectoration which was repeatedly examined but no tubercle bacilli could be found. The "bronchial" symptoms continued, until a few weeks after admission he was sent to Dr. Fletcher D. Woodward, of Charlottesville, for an examination of the sinuses and throat. Dr. Woodward found nothing of importance but suggested a bronchoscopic examination. This was made and he found, in the main stem of the right bronchus, a pedunculated tumor, which almost filled the passage. A biopsy was done and a microscopic examination of this revealed carcinoma. He was sent to Jackson's Clinic in Philadelphia in July, 1930, where this diagnosis was confirmed and radium therapy given.

Remarks: Symptomatically, this patient could easily have been considered as having tuberculosis, but the physical examination, X-ray and sputum examination did not corroborate it. There was no possible way to establish a diagnosis at this stage of his case without a bronchoscopic examination and we believe that where tuberculosis can be excluded in obscure cases of this type, the bronchoscope is an invaluable diagnostic aid.

CASE 11: J. C. L.; age 55; occupation given as farmer. Was admitted to Sanatorium December 5, 1930. *Family history:* No known exposure to tuberculosis. *Past history:* Fifteen years ago, patient had pneumonia while working in the mines and following this was told he had "weak lungs" and advised to change his occupation. *Present illness:* Since he stopped work in the mines he has not been entirely well and has been subject to frequent attacks

of "colds" which were inclined to last for a long time and were followed by cough and shortness of breath. In November, 1930, he developed a deep "cold" and on consulting his family physician he referred him to a diagnostician, who made a diagnosis of pulmonary tuberculosis and recommended

Case No. 11.—Silicosis Note the distribution—heavy fibrosis extending off from the root zones to the periphery, more marked in the right, with the apices and bases clear. "Bat-wing" appearance.

sanatorium treatment. At the time of admission patient showed poor breathing over the entire lungs, being most marked over the lower lobes. Numerous rales were heard over the lower two-thirds of both lungs, in front and behind. These rales were mostly of the musical type, although some fine mucous rales were present. *Laboratory findings* were of no significance except repeated specimens of sputum were negative for tubercle bacilli, both the concentration and direct methods being used. Summary of *X-ray findings* is as follows: "Occupying the central two-thirds of the right lung and about the middle third of the left lung is seen an inflammatory process of some character. This sweeps over from the root zone and goes into the lung field in a typical 'bat-wing' appearance. Tuberculosis can not be excluded, but these findings look more like silicosis than anything else."

Remarks: One of the most significant points in this case is the history. This patient told his family physician and the consultant before coming to the Sanatorium that his occupation was farming, and when he came to us he said nothing at all about having worked in the mines and having been advised to quit that work, due to the condition of his lungs. After seeing his X-ray films and making a tentative diagnosis of silicosis, we questioned him closely and he recalled the above facts, stating that during his fourteen and one-half years in the soapstone and graphite mines he ran a grinding machine which subjected him constantly to the inhalation of much dust. We could not get enough evidence in this case to say that there was any coexisting tuberculosis present. The important points in diagnosis in these cases are repeatedly negative sputum for tubercle bacilli; occupation, that is, history of having worked in the mines; and appearance of the condition on the X-ray films.

CASE 12: D. L. W.; age 58, farmer. Admitted to Sanatorium May 4, 1931. *Family history:* One brother has asthma; one sister died from diabetes. No known contact with tuberculosis, either in the family or otherwise. *Present illness:* In January, 1930, patient began to cough and have some expectoration. This was followed by loss of weight and some slight fatigue on exertion. He consulted his family physician, who thought he had tuberculosis and made application for his admission to the Sanatorium. On admission, the *physical signs* revealed harsh breathing and increased voice conduction over the upper lobes of both lungs, and numerous moist rales were heard after cough from top to bottom of both lungs, being a little more numerous in the root regions. *X-ray conclusions* were as follows: "Scattered areas of infiltration throughout both lungs, which reach the point of light mottling in the lower lobes. Some small calcified nodes are scattered throughout the lung field. This disease is not typical of tuberculosis and probably represents some other type of infection." Sputum examinations were repeatedly negative for tubercle bacilli. Some abnormal growths, which were thought to be fungus, were noted on all the slides. The sputum was cultured and this fungus was found to grow prolifically on Sabouraud's media. Dr. Frederick Shaw, of the Medical College of Virginia, was consulted, and he very kindly consented to identify the fungus. He found it to be a monilia, and a diagnosis of bronchomoniliasis was made.

Remarks: The physical signs in this case suggested tuberculosis, but the X-ray revealed an infection atypical of that. Due to this fact, a more thorough search of the sputum was made and this showed granular yeast-like bodies and an absence of tubercle bacilli. On either Sabouraud's media or dextrose agar, this organism grew freely, producing mycelia and budding. The diagnosis of bronchomoniliasis must be made in the laboratory.

CONCLUSIONS

1. The subject is discussed in two parts: first, the various factors to be considered in making a diagnosis of tuberculosis in the average uncomplicated case; second, the consideration and exclusion of other conditions most commonly confused with tuberculosis in diagnosis.

2. Under the first heading the importance of applying the "diagnostic yardstick" is emphasized. A thorough analysis is advocated and correlation of all seven factors, namely, History, Symptoms, Physical Signs, X-ray Evidence, Tuberculin Test, Laboratory Findings, and Exclusion of Other Causes, is advised before a final conclusion is reached.

3. The minimum requirements for making a diagnosis of tuberculosis are as follows:

(a) The finding of tubercle bacilli in the sputum is, with rare exceptions, in itself diagnostic.

(b) Definite and persistent medium bubbling or mucous rales, heard with cough, or during the first part of inspiration following cough, in that part of the lung field located

above the second rib in front or the body of the fourth dorsal vertebra behind.

(c) Demonstration on X-ray films of a definite parenchymatous lesion located above the second rib in front or the body of the fourth dorsal vertebra behind.

(d) Pleurisy with effusion, or hemoptysis not otherwise explained, justifies a provisional diagnosis and a careful study over a period of months or even years, for further evidence of the disease.

4. In the exclusion of other causes in the diagnosis of atypical cases of tuberculosis, several diseases must be considered. The most common are briefly discussed, with a few points given in differential diagnosis. They are as follows: Lung abscess, bronchiectasis, lung tumors, fungus infection, pneumonoconiosis, nasal sinusitis, carious teeth and diseased gums, Malta fever, tularemia, toxic goitre and endocarditis.

5. A few cases which illustrate common errors in diagnosis are included, with a brief summary of the histories and remarks on the importance of applying all the available diagnostic aids if mistakes are to be avoided.

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HEALTH WORK IN THE NORFOLK PUBLIC SCHOOLS.*

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When I began to make an intensive study of the health work as done in the schools I was impressed from the outset by the enormous number of major defects found among the pupils that would, if uncorrected, have a very disastrous bearing upon the educational career of the pupils. These defects were noted not alone among the very poor, but often in children from the very best families. You can readily understand why the children of the poor might reach the school age without having had any kind of corrective work done, but it is not so easy to understand why children of intelligent, well-to-do families can reach school age and still be mouth breathers,—with conspicuously enlarged adenoids and tonsils; have many defective teeth untouched by a dentist, be badly under-nourished, with slouching posture, and never having been vaccinated against small-pox, or inocculated against typhoid fever, and never having had the protective treatment of toxin-antitoxin.

These are some of the things I desire to bring before you tonight and get your ideas as to what can be done to get the major part of the corrective and preventive work done before the child reaches school age. There is no reason why a child should have his school work constantly interrupted by having to make repeated visits to the dentist; having a sore arm from inoculations and vaccinations, or having to go to a hospital to have his adenoids and tonsils removed, and be incapacitated for school at least a week or ten days, when this work might very readily, in the majority of cases, have been attended to before he reaches school age.

As you know, the great majority of families

*Read before the Norfolk County Medical Society, March 23, 1932.

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have some physician they claim as their family physician, and these are the men I want to appeal to, because those who employ the services of pediatricians have, as a rule, had this preliminary work done. It would not be just or fair to state that the family physician is negligent of his duty; it would be more charitable and more in keeping with fact to simply say that he has been indifferent, or perhaps kindly indifferent—as he did not want to put these people to too much expense, or what the people might consider an unnecessary expense—simply pursuing the course of least resistance, forgetting the welfare of the child.

Our health work in the public schools, broadly speaking, has for its object to keep the child in school the greatest number of hours of his allotted school time, and under the best conditions possible for health, growth, development and study. There is almost a universal clamor for greater attention to the pre-school child, and when you get the public aroused, it is going to be demanded that this work be done, and if it is not done by the private physician, family physician or specialist, it is going to be done by some other agency whether we wish it or not. There has been much unfavorable criticism about so-called State medicine, but if such a thing ever comes to pass, it will be the physician's own fault. Children are human beings and they are entitled to a fair chance, if nothing more; they are entitled to reap the benefits of what can be done for them in the way of preventive and corrective measures. Domestic animals of every kind are getting as much. As yet, the pre-school child is not getting a fair chance, or else there would not have been 5,000 deaths from diphtheria in the United States during 1928 among children from one to six years of age. Diphtheria is a disease absolutely preventable, and if every pre-school child could only have toxin-antitoxin or toxoid, and then six months later be checked up by the Schick test to see if he is immune, and the treatment repeated if necessary, we could absolutely eliminate diphtheria from the public schools within a comparatively few years. Toxin-antitoxin is effective (that is, confers immunity) in about 90 per cent of the cases, but we should not be contented with being 90 per cent perfect; the life of one child of the 10 per cent groups is equally as important as the life of any one of the 90 per cent group.

You have heard it remarked that the general practitioner was not getting a square deal; that the better part of the work he formerly lived upon is rapidly being taken away from him, and that there is less and less for him to do. This is a very narrow and short-sighted view to take of the situation. All of us since we first entered medicine have been striving to prevent disease, and now we are beginning to see the fruits of our work. If every physician did his part in preventive work, he would receive greater pecuniary remuneration than if he only attempted to treat disease. For example, suppose any one of you had 100 children under your care, and you inoculated each against diphtheria at the minimum price of, say $6.00 for three inoculations of toxin-antitoxin, or two of toxoid, this would be $600.00. Then suppose no preventive work at all was done, you would hardly have more than four or five cases of diphtheria developing among this 100 children, and at the very most you would scarcely be required to give each one of these cases more than half a dozen visits, which would not amount to more than $25.00 for each of the six patients, which for comparison would be approximately $150.00 against $600.00 if you did the preventive work instead of the curative work. A similar comparison could be made in regard to typhoid fever.

Now let us consider briefly the pre-school clinic; no actual treating at all should be done—it should be simply educational. Cases should be referred to their private physicians for preventive and corrective work, and if unable to employ a physician they should be referred to one of the various clinics. In one city I recently visited, as a concrete illustration, out of 32 children in one pre-school group referred by this educational clinic to the family physician for a thorough examination, 28 reported later that they had been to their private physician for this necessary work. Without this clinic scarcely half a dozen would have had this work done. The physician's work should actually be increased by such a clinic, and, personally, I feel that if he would only view it in its true light, he would be more than willing to lend a helping hand.

Referring again to the actual medical work done in our schools, we try to adhere very strictly to the rule not to do any treating of any kind (except the most trivial, and to render first aid in accidents and emergencies)

but refer cases to their family physician, or to a clinic for treatment. However, I think there is one class of cases that should be treated from the schools, and that is scabies, ringworm, impetigo and pediculosis among the very poor. These cases have to be excluded from school for the protection of others, and, unless they are promptly and properly treated, they often have to remain from school for weeks or months, whereas, if they could be properly treated, they should be able to return to school after a few days. Many of this class of parents are glad of an excuse to keep their children from school, and pay no attention whatever to treatment. This is where a public health nurse could be able to do most effective work, and such a nurse should be provided, for the school nurses have all they can now attend to.

Vaccination and inoculation are strictly a public health measure and are not done by the schools, but by the health department. As you know, pupils have to be excluded from school unless they have been properly vaccinated, and often, in order to keep children in school, our inspectors vaccinate a few cases who are unable to employ a physician, and haven't the money for car or bus fare to go down to the office of the health department and have this work done. It would be a progressive step if the health department could arrange to send to the schools in the outlying districts of the city to do this vaccination at the first of each school term, and not impose this work upon the schools.

I have had many inquiries as well as criticisms from a number of interested physicians and patrons of the various schools in regard to school luncheons served in the lunch rooms. The lunch rooms are not under the supervision of schools except in the High School and one or two of the primary schools. In most of the schools the lunch rooms are under the supervision of the Home and School Leagues. These women are, as a rule, a very earnest, capable and enthusiastic group, and want to supply only what is best for their children. However, I think in some schools there could be some very helpful changes made in some of the menus. As yet I have been able to act only in an advisory capacity, but I hope to be able to give constructive suggestions later to help climinate some of the undesirable practices in some of the lunch rooms. It is very difficult to make a child eat properly at school if he is allowed to eat as he pleases at home. There is no other place in which a child reflects his home training more strikingly than in the lunch room.

Every child should have his eyes examined before he is ready to enter school. It is done as a routine in the schools, but, of course, our examination is very superficial, and we can pick up only the worst cases, but even at that it helps toward the proper seating of the children in class until we can have a more thorough examination of the eye made, and glasses properly fitted. The hearing is checked up by the audiometer, and the work in this line is most satisfactory, enabling pupils with defective hearing to be placed towards the front and close to the teacher.

In closing I should like to ask for a free and frank discussion of the best means of finding and correcting major defects in the pre-school child, and I should like further to have constructive criticism of anything as set forth in my brief outline of health work as done in our public schools.

AN UNUSUAL CASE OF PERITONITIS.*

W. LOWNDES PEPLE, M. D., Richmond, Va.

Mr. P. C. P., Jr., age sixteen, was admitted to St. Luke's Hospital on February 22, 1931.

His past history was negative as he had been an unusually healthy boy. On February 8th he had an attack of what appeared to be influenza. It began with generalized pain and aching all over the body. There were no chills and apparently no fever, though his temperature was not taken at the time. His appetite seemed not to be affected at all as he ate heartily. He remained in bed for about three days and took the usual remedies which are given for influenza. He then got up and after going about the house for a few days resumed his ordinary duties about the farm. After an interval of about two or three days he became acutely ill again, with a severe pain all over the abdomen. There was nausea and persistent vomiting and he lost his appetite for the first time. He had also a persistent diarrhea with frequent yellow watery stools. They were mucoid in nature and very offensive in odor. This lasted for about three days. The bowels would check up considerably with

*Read before the Northern Neck Medical Society, at Heathsville, Va., May 28, 1931.

the administration of morphine. His temperature at this time was recorded twice daily and remained around 102°. In a few days all the symptoms abated and the temperature become normal and stayed so for about three days. At the end of this time the abdominal pain returned and was extremely severe. The nausea came back and his appetite remained very poor.

On February 19th, three days before admission to the hospital, his temperature was 102°, and the pain was particularly severe and seemed colicky in nature. The nausea continued and there was marked lassitude and occasional spells of delirium. The family physician who had been in almost constant attendance noted now that there seemed to be free fluid in the abdomen. It was then decided to bring the patient to St. Luke's Hospital where he was admitted on February 22nd.

His temperature on admission was 99° and his pulse about 85. The temperature rose that night to 103° and his pulse to 120. His urine showed a distinct trace of albumen with an occasional hyaline and finely granular cast, but was otherwise negative. He had 15,600 leucocytes with 79 per cent polymorphonuclears, 20 per cent lymphocytes, and one large mononuclear cell. There were 3,570,000 red cells with 57 per cent hemoglobin. By the next day, February 23rd, his white cells had risen to 23,200 with 90 per cent polymorphonuclears. There were no malarial organisms present and the Wassermann was negative.

The boy continued very ill with irregular temperature running from 99° to 103° and with rather frequent chills and heavy sweats His abdomen was constantly distended and appeared to be filled with fluid. The right chest showed dullness over the lower lobe so an X-ray was taken with the following findings: "Bony thorax appears normal. Diaphragm on the right side is entirely obscured at its upper surface, the lower lobe of the right lung being densely consolidated. There are some deposits along the bronchial branches on the right side and a few tubercles not yet calcified are seen in the apex and outward from the hilum. The left lung shows a slight mottling along the ascending bronchial branches. Appearances indicate that the patient has pneumonia at the base of the right lung. There is also some tuberculous involvement of both upper lobes."

He was kept under close observation and his symptoms gradually subsided until his evening temperature was around 100°. The distention in his abdomen had now become so great that it was thought advisable to relieve it as it was embarrassing his respiration. We had been unable to arrive at a diagnosis but in spite of high poly count in his blood and the negative X-ray findings for active tuberculosis in his chest I was inclined to think we were dealing with a case of acute tubercular peritonitis. For this reason I felt it safer to make an incision than to attempt to use the trochar to remove the fluid from his peritoneal cavity.

On February 27th, five days after admission, a lower right rectus incision was made under spinal anesthesia, and about a gallon of cloudy yellowish ascitic fluid was withdrawn. There was a large quantity of coagulated lymph, looking like masses of jelly, throughout the abdomen. This was bailed out as far as possible with the hand. The abdomen presented a peculiar appearance. From the margin of the liver and the top of the spleen down into the pelvis there was a smooth covering uniformly sealing off all of the abdominal viscera. It was as though a curtain had been drawn from the liver margin down into the pelvis completely covering every abdominal organ. The hand could be passed between the liver and the chest wall and between the spleen and chest wall though there was a great deal of coagulated lymph in these areas.

The parietal peritoneum was thickened but there were no visible tubercles and no palpable tubercles anywhere. Looking down upon the covering to the intestinal contents it looked as though the omentum had been covered over with a new peritoneal coating. For fear of making a fistula this was not disturbed.

I could reach no other conclusion than that I was dealing with a case of tubercular peritonitis. Fluid was obtained for examination and guinea pig injection. Several sections from the parietal peritoneum were obtained for examination, and the wound was closed without drainage.

Following this operation his temperature was quite erratic, running from 98° to as high as 104°. The fluid re-accumulated very rapidly and although the temperature had dropped to below 100° by March 7th, it was decided to make a second incision and institute drainage.

Accordingly this was done on March 7th under spinal anesthesia supplemented with local novocaine. Up to this time the *Streptococcus pyogenes* was the only organism found in the fluid. A low left rectus incision was made about two and one-half inches in length and more than a quart of thick purulent fluid was aspirated from the abdomen. A rubber tube drain was then put in and the wound closed around it.

From this time on his improvement was very steady in every way. The wound drained very profusely but all of his symptoms grew better. By March 18th, a little less than a month after admission, his temperature had reached a definite normal and stayed there until his discharge from the hospital. The drain was allowed to stay in for about two weeks and when removed the wound healed nicely. Cultures from the purulent fluid showed the *Streptococcus pyogenes*. The boy was rapidly taking on weight and gaining in strength and improving in every way. An X-ray picture taken April 1st showed the following: "The diaphragm has now returned to normal position. Both lung fields are entirely clear. There is a rather marked bilateral thickening of the structures of the hila and of all bronchial branches. While there is considerable thickening and furring of the ascending branches the signs hardly warrant the diagnosis of unhealed clinical tuberculosis at the present time." The pathologist reported that the tissue removed from the parietal peritoneum showed nothing but an acute inflammation. There was no evidence of tuberculosis. On April 20th, the guinea pig which had been inoculated with the pus from the peritoneum was killed. He showed no evidence of tuberculosis.

Our conclusion is that this was a blood borne infection simultaneously of the peritoneum and the right lung and pleural cavity with a pyogenic organism associated with an acute attack of influenza. The case is reported because of its very unusual course and its happy ending.

CARDINAL PRINCIPLES IN THE TREATMENT OF ASTHMA AND HAY FEVER.*

W. E. JENNINGS, M. D., Danville, Va.

There are a number of diseases that are grouped together because they are characterized by hyper-sensitiveness to some substance—not necessarily the same substance in all of the group of diseases or one particular substance in different individuals. However, the sensitiveness remains constant in the same individual. The group of diseases referred to include asthma, hay fever, urticaria, migraine, eczema, and possibly two or three others.

It is well to remember that the chief pathology in all of these conditions is edema, and it is mainly from this edema that the symptoms arise. It is not definitely known that this condition holds true in migraine, but it is supposed at any rate to be some irritation to the meninges of the brain.

In asthma and hay fever the pathology is mainly limited to the mucous membrane, except, of course, in long standing cases of asthma there may be changes in the bronchioles and of the alveolae with or without a super-imposed infection.

Here we have an abnormally sensitive tissue to certain protein elements. This sensitiveness is not in the blood but in the tissues themselves. Nor do antitoxins develop in the blood from injections of the offending material. For this reason no immunity can be produced, but, by the injections of gradually increasing doses of the proteins to which they are sensitive, the tolerance of the tissues can be raised in most cases to the point where the individual in ordinary walks of life can be made comfortable and symptom free.

In order to be successful in handling these cases we must have, first, a fair working knowledge of the cause and effect in these cases, and we must also know something of the chemistry of the offending material and its characteristics. It is also essential that we have a fair knowledge of botany, and particularly should we know something of the plants that produce these diseases, and it is essential to know their habits and flowering time.

Second, we must get a careful history in all cases. The time of the year of the onset, duration, etc., will usually give us some clue as to the cause. A careful family history is essential because these conditions are practically always hereditary.

Third, a complete and thorough physical examination should always be made.

Fourth, we must have a knowledge that the

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material we are using is properly made, properly standardized, sterile and fresh.

Fifth, there must be a willingness on the part of the physician to follow out minute details in both testing and treatment.

Sixth, complete records must be kept. Unless this is done we can never hope to secure successful results because, in the first place, the dose of whatever extract we are giving should be increased gradually and systematically and at regular intervals if the patient is to get the result he should expect. Where we are treating several cases at one time we cannot hope to remember the dose each time nor the things to which the patient is sensitive, nor the things to which he is not sensitive.

Seventh, unless we can have the intelligent and whole hearted cooperation of the patient we are surely doomed to failure, and this should always be impressed on the patient on the first examination.

In connection with the taking of a complete history, it is very well to remember that this group of diseases is hereditary. Where one parent is allergic approximately 35 per cent of the offspring will show some form of allergy by the tenth year. Where both parents are allergic 77 per cent of the offspring will develop allergic symptoms by the tenth year. This does not mean that the same disease is transmitted in direct line but one of the group; also, in very young children the condition is practically always due to food proteins and occasionally infection. After the fifth year it is more apt to be caused by inhalants, and when the disease begins after the fiftieth year it is practically always of bacterial origin.

Another thing worth bearing in mind is the fact that certain drugs can and do produce asthma, particularly aspirin, phenolphthalein, certain of the coal tar products and some of the barbital group.

Chocolate is a very frequent cause of angioneurotic, migraine, edema and occasionally asthma.

I shall not go into the technique in testing for a diagnosis further than to state that we use the intracutaneous method in preference to the scratch method, first, because it is much more exact for the reason that we use a known quantity of a definitely known strength. In the scratch method the amount absorbed is problematical and of an unknown quantity; hence, the reaction might show negative due to the lack of absorption, when, as a matter of fact, a positive reaction would have been obtained if a more exact method had been used. The material we use is the same as that used by Coca, also Cooke and Vander Veer, and is prepared under the supervision of the Cornell Medical School.

Given, then, a patient with the proper diagnosis, and here I refer particularly to those persons whose trouble is caused by inhalants or foods, we are confronted with the problem of treatment. Here, again, is where good judgment is needed in those cases where a number of reactions are shown. It may be that the person reacts to various substances to which he is rarely exposed. These can as a rule be disregarded in the treatment. Then the treatment resolves itself into preventive and curative. If the patient is sensitive to certain food proteins or pollens and these can be easily avoided, the treatment would naturally be to avoid these materials. For those things that cannot be avoided an active immunization is begun, using the next strength dilution above that which gives an active reaction. The initial dose is usually one-tenth cubic centimeter, given twice a week and increasing one-tenth cubic centimeter at each dose, unless too much reaction is shown, in which event the dose is reduced. This type of case can be treated very successfully if done carefully and over a sufficient length of time. Here success or failure is very often determined by the cooperation or the lack of cooperation given by the patient.

Asthma and hay fever can be produced by non-specific material in subjects that are already hypersensitive.

A very good example of this was presented by a boy of ten years who came to me this summer. He was suffering with a very severe attack of asthma which required adrenalin to give him temporary relief. His past history was comparatively negative except for the usual childhood diseases and a tendency to have frequent colds. He always lived in Philadelphia and never had an attack of asthma so far as his parents knew. However, his mother had noticed that he had at times difficult breathing which she attributed to an upset stomach that was relieved by a purgative. While visiting his grandmother in the country this summer he came in contact a great deal with a dog and chickens. After riding one day several miles on a dusty sand clay road he developed

a very severe attack of asthma and it was at this time that I saw him. He was tested out and found to be very sensitive to house dust, moderately sensitive to dog Epithelium, feathers, and slightly sensitive to egg white and coffee.

Here was a case in which all the factors were present to produce asthma but the attack was precipitated by road dust—a non-specific substance.

Another case of a different type was presented in an infant ten months old. This child was well grown and well nourished and normal in appearance with exception of eczema on its face and upper arms. As far as the child's mother knew the family history was negative except the child's father had had hay fever. Past history was negative. She had never nursed. She was first started on boiled milk and dextri-maltose which did not agree with her. After this she was put on lactogen and karo syrup and she has been on this ever since. About the first part of the past January she was put on tomato juice one day and orange juice the next. The latter part of January she began having an eruption on her face and arms, which was diagnosed as eczema. The past winter she was tested to several different things but the mother did not remember what was used. For the past two or three months she had been fed some eggs. She was tested to orange juice, milk, egg, cotton seed, wheat, and tomatoes. She was found very sensitive to orange and moderately sensitive to egg white. The use of orange juice was discontinued and the mother was advised against feeding the child eggs. She was given a bland ointment and in two weeks time her skin was entirely clear and free of eczema.

Another case was a married woman, age 29, with two normal children and in good health except for the fact that she had had hay fever almost continously for the past seven years. In the Spring of 1922 when she was teaching school she began sneezing after the children had brought a large bunch of flowering privet hedge into the schoolroom. This lasted for several days after which she was free from any trouble until the middle of the following August. At that time she began sneezing again and had what she thought was a bad cold which lasted through August and September. This subsided until the first of the following May since which time she has had hay fever continuously the year round but worse in the Spring and Fall. She had been treated before by two different men without any appreciable result. She was tested to about forty different proteins and gave some reaction to them all. She was found to be moderately sensitive to house dust and feathers and very sensitive to ragweed and timothy. She was advised to avoid all dust as far as possible and to avoid the use of feathers, also fowls and canary birds. The first part of January of this year treatment was begun with her using one-tenth cubic centimeter of a one to 20,000 solution of timothy extract. This was increased one-tenth cubic centimeter a dose and given three times a week until she was taking six-tenths of a one to 1,000 solution with a very slight reaction. This dose was kept up once a week until the middle of May. She went through the Spring with no symptoms of hay fever. About June 20th she was started on ragweed extract, using one-tenth cubic centimeter of a one to 10,000 solution. This was given three times a week, increasing one-tenth of a cubic centimeter at a dose until she took seven-tenths of a one to 1,000 solution. At this period she had a rather marked reaction. The dose was then dropped back to four-tenths and she was kept at this until about the first of September. She went through the ragweed season with very little sneezing and has had no sneezing since frost. Prior to that time she was having hay fever the year round.

The fourth case occurred in a woman, aged 50, who had always been healthy and robust. Has had two children, living and well, and no miscarriages. Her past history was essentially negative. Her mother had eczema off and on all her life. Her asthma first started at the age of ten years, and lasted off and on until she was grown. Her first child was born when she was thirty. She had been free from asthma for ten years, but at this time she had an attack which lasted two months, when it disappeared again for eight years. She has had it off and on since that time. At present she is inclined to have asthma the year round but usually it gets worse in June and lasts through September. She has always been made worse by tobacco smoke, and her asthma has always seemed to be worse on the right side of her chest. Her physical examination was negative except for her asthma and possibly a slight tenderness over her gall-bladder. At times she has a slight elevation of temperature.

She was tested out two years ago in St.

Louis and Memphis, and reacted to feathers, animal hair, and slightly to short ragweed. "At that time she had an X-ray made of her head which showed both frontal sinuses c'oudy, both ethmoids cloudy, both antra very cloudy, and both sphenoids were cloudy. On account of this an antrotomy was done and the ethmoids were exenterated."

I saw her this year in July with a severe attack of asthma. At this time she reacted very markedly to house dust, slightly to timothy, moderately to feathers, slightly to orris root, and negative to ragweed. Her sputum was loaded with a mixed infection. X-ray examination of her sinuses showed negative. Here was a case of long standing asthma with a super-imposed bacterial infection which did not respond well to treatment, and her asthma was confined mostly to her right side.

This last case brings to mind a rather interesting report given by Dr. Edward A. Looper, of Baltimore, in the October 31, 1931, issue of the *Journal A. M. A.* on the use of the bronchoscope. Here he reported some cases where he found a bronchus plugged with mucus which was removed by suction—to the relief of the patient. Another case was mentioned in which he removed a small growth from a bronchus with relief of the patient's asthma.

I am inclined to believe that more obscure cases of asthma, particularly where it is unilateral, could at least be benefited by a more extensive use of the bronchoscope.

Conclusions

This group of diseases can be treated very satisfactorily where the fundamentals of the conditions are understood and proper technique carried out.

These conditions are a great deal more prevalent than are generally recognized.

By proper handling a great deal of discomfort and suffering can be avoided, and loss of time from work can be prevented.

705 *Main Street.*

SOME THOUGHTS ON APPENDICITIS.

F. J. KIRBY, M. D., F. A. C. S., Baltimore, Md.

While discussing a paper entitled "Has the Last Word Been Said about Appendicitis?" Dr. J. M. T. Finney made this statement: "The last word would not be said about appendicitis until we can count 100 per cent cures, with wounds healing by first intention."

We all realize that this goal, though so much desired and striven for, is certainly not yet within our grasp—for several reasons: viz., some cases of appendicitis proceed to gangrene or necrosis from the beginning of the attack. Again, there is still the belief, and this is borne out to an extent by experience, that many cases yield readily to medical treatment. Further, pathological changes taking place in the diseased appendix, or shadowed by the administration of opium and its preparations, mislead from a clear concept of conditions. Then an aversion still remains uppermost with some persons towards surgical operation, thus delaying proper treatment until the outcome is doubtful.

With our present operative technique, it is true to state that a patient with a diseased appendix is safer with it removed, and that early operation for acute appendicitis is associated with a mortality which is almost nil.

All cases of appendicitis are well on the road to recovery or else come to operation within four or five days after the beginning of the attack. One cannot rely upon the mouth temperature as an accurate guide to the pathological changes taking place, or to the extent or character of the progress of the disease.

In all abdominal conditions, temperature to be accurate and trustworthy should be taken in the rectum.

Rectal temperature of 101 F. or over, several days or more after the beginning of the attack, always means a gangreonus appendix, or a purulent process present, and hence are not surgically clean cases.

Cases Becoming Gangrenous Early

In this type, generally with the first attack, the pain comes on suddenly with vomiting, often during the night or early morning, and awakens the patient; pain is intense in the epigastric region, with frequent retching and vomiting; pain continues, and within ten or twelve hours the pain moves lower down in the abdomen, lessens, and tenderness can be made out over the appendix—obstructive appendicitis.

If the appendix is post-cecal, there may be no tenderness or rigidity over the abdomen anywhere, the tenderness being confined to the region of the loin posteriorly. Later within ten or twelve hours it can be elicited in the lower right quadrant.

If the appendix is in front of the cecum, ten-

derness and rigidity can be made out earlier in the lower right quadrant of the abdomen, and tenderness to pressure over McBurney's point is extreme. The temperature does not increase for twelve hours or so, and the rise is slow. Early the white cell count is high, often in the twenty thousands, with polymorphoneutrophiles markedly in excess—around 90 per cent or more.

Unless relieved by operation, this continues until the blood vessels become thrombosed, and definite gangrene is present, when frequently there is then a lull in the pain, as the necrotic coats of the appendix give away and relieve pressure. As this occurs, the temperature usually drops to normal point, or a little below, only to rise again as the septic material involves the surrounding structures, and peritonitis, diffuse or local, with pus formation sets in. The marked tenderness remains, even though rigidity lessens, and the exquisite tenderness to pressure is apparently out of all proportion to the temperature and general expression of the patient, whose pulse is quiet and he does not look very ill.

At times there is little or no rigidity. Pain is complained of and severe tenderness down towards the pubic attachment of Poupart's ligaments. This means that the gangrenous appendix is pointing downward and forward into the pelvis—pelvic appendix.

Pain in voiding urine signifies exudate in the pelvis, behind the bladder, and is generally purulent in type.

Red blood cells are frequently found in the urine in cases where the inflamed, diseased appendix is post-cecal, due to hyperemia. Gangrene of the appendix is due to obstruction, produced either by a stricture or kink, or to fecal concretions. Sometimes a large fecal concretion is found at the proximal entrance in the cavity of the appendix, completely obstructing it, and causing congestion, edema, thrombosis of vessels and death of the appendix. Again, the lumen may be filled with pus. As for medical treatment, many receive no treatment whatever.

The attack comes on with pain and vomiting. The individual, regarding it as acute indigestion, takes a purgative, and, with the release of pressure, congestion subsides, and the patient is over the attack in a day or two, suffering only a little soreness for a time. If treated medically, an attack is best handled by sitting patient upright in bed, placing ice-caps over lower abdomen, and giving no medicine whatever. Small amounts of cold water may be taken by mouth, when the attack, if amenable to relief in this manner, will quickly subside; otherwise, it is a case for operation.

Where there is pain in the abdomen with sudden rise of high temperature, one must look for the trouble elsewhere; and it will likely be found in the thoracic cavity.

Opium or its derivatives should never be given until the diagnosis is complete and decision has been reached as to the handling of the patient. By this we mean that, once arrangements are made for transportation of patient to hospital and operation, small doses of morphia may then be given hypodermically if patient is in much pain.

The ice-cap often is as potent in relieving the pain as is opium. It is an extremely unwise procedure to have a consultation whilst the patient is under the influence of opium.

Acute appendicitis begins with pain, the pain always preceding the nausea or vomiting.

I have never met with a case of appendicitis which began with chills—always pain first. Chills do occur in a small percentage of cases of appendicitis, and, when they do, it is significant of a septic factor, either gangrene, or a purulent appendix.

Pain of appendicitis is at first more or less generalized over the abdomen, centering around the umbilicus, and in a few hours, usually eight or ten hours, localizes in the right lower quadrant of the abdomen, and here the point of tenderness is found at "McBurney's point."

If one will draw a line from the umbilicus to the right anterior superior spine of the ileum, with another through the centre of this line, at a right angle to it, and come outwards 2.5 c.m. from the point where the two lines cross, this will give you McBurney's point. At the outer edge of the rectus muscle on the line drawn from the umbilicus to the anterior superior spine, we find Munro's point of tenderness in appendicitis.

If the appendix is post-cecal, and many of them are, the tenderness can be elicited posteriorly by pressure in the loin. This should always be remembered when examining a patient for appendicitis. If the appendix can empty itself, as it does in some acute cases, as in certain cases of appendiceal colic (where one usually sees a large, long, free, bluish-grey looking appendix containing dark black soft feces and a cecum of much the same color) or

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as in attacks of cholangitis, relief is afforded until return of another attack. However, if the pathological factors continue active, congestion, engorgement, edema, and obstruction with presence of bacteria, whether due to a twist, stricture, or fecal mass in the appendix, the vessels become occluded, thrombosed, and necrosis and gangrene supervene.

A hard, rigid, retracted abdominal wall means extension peritonitis. There is one class of patients, inclined to stoutness as a rule, over 40 years of age, who have, associated with their appendicitis, distention and tympany of the intestines—a condition of paresis, likely the result of toxemia upon the nerve control in the bowels.

These appendices are generally gangrenous, or in a condition of acute suppuration. These patients as a rule show granular or hyaline casts, or both, in the urine. The abdomen remains distended after operation; they vomit, and there is some difficulty in getting the bowels opened. This can be overcome by lavage and medication through the stomach tube, or an ampoule of pituitrin can be given hypodermically every hour until five or six are given, or the bowels move, which they usually do with large movements and much gas expelled; however, in a short time the patient is distended as before, a condition of adynamic ileus. The abdomen is tense, distention remains, and these patients die from a condition of peritoneal sepsis. From our experience we feel that these cases should not be operated upon as emergency cases, but should be put to bed, placed in an upright position, stomach washed out, ice-caps kept over abdomen, and nothing given by mouth except small quantities of cold water, with rectal drip instillation of bicarbonate of soda and glucose. This treatment should be kept up until the patient's general condition improves. Fever, if any, will subside, and abdominal distention softens and quiets down—essentially the "Ochsner treatment."

We have handled such cases in the manner described, keeping them on this treatment as long as ten days or more, when we were able to open the abdomen, remove the diseased appendix, and have the patient recover.

Rigidity is in proportion to the irritation of the overlying peritoneum. Leucocytosis is in proportion to the tension the bacteria are under.

When possible a differential leucocyte count should always be made; the polymorphonuclear cells will predominate. The bacteria invading in appendicitis have been frequently worked out, and comprise mainly the pyogenic and colon group.

Fecal fistula as a result of diseased and necrotic bowel, if in the cecum, generally takes care of itself, heals and rarely calls for closure operation; fistulae in the small intestine require closure by suture.

The hard smooth bulbous extremity in the tip of a chronic irritated appendix is suggestive of adeno-carcinoma. The pain in appendicitis begins above and travels downwards; the pain in pelvic inflammatory disease begins below and travels upwards.

Pyelitis in pregnant women comes on with a chill, high temperature, pain in the side and about the loin, with tenderness over the affected kidney, and a history of some previous slight vesical disturbance. The urine upon examination will be found to contain pus cells, and at times blood cells. In these cases urine had best be collected by catheter, if necessary by direct catheterization of the kidney pelvis itself, when the urine will flow from ureteral catheter under tension and will be purulent.

110 *East North Avenue.*

ARTHRITIS.*

J. S. GAUL, M. D., Charlotte, N. C.

Arthritis is a general systemic disease with joint manifestations. This disease has assumed a leading role in the production of disability and economic loss.

It is important from the standpoint of successful treatment that a broad concept be had of the disease. It must be appreciated as having a background, at times in heredity, in altered physiologic processes and in faulty mechanics. Trauma and infection must be considered, mental and physical fatigue are important.

There are two large groups in the rheumatic patients: first, those with the atrophic or proliferative type, the rheumatoid type of the English, and, second, the hypertrophic or degenerative type or the osteo-arthritis of the English.

The atrophic type is usually found in young, thin, ptotic persons. The musculature and muscle tone is poor, the thoracic cage narrowed, the costo-phrenic angle acute, the

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Suffolk, Va., December 1-3, 1931.

diaphragmatic excursions are shallow, the abdominal viscera sag, the colon and cecum are dilated and "boggy," and the posture and weight bearing are poor.

The onset is usually acute. Patients fatigue easily, both mentally and physically, and have pain and fairly pronounced joint swellings from effusion. The involved joints atrophy from disuse, and do so quite rapidly. The X-ray reveals early changes in the bone, with increased density of the soft parts and diminished density or atrophy in the bone.

In the spine there is frequent involvement of the anterior spinous ligament, which on contracting produces the marked kyphotic deformities seen in this disease.

The pathological changes in the atrophic type appear in proliferative changes in the synovia and later atrophy of the cartilage. This is followed by severe atrophy, fibrosis, adhesions and ankylosis.

The hypertrophic type is found in those past middle life, and of the robust type. The onset is gradual. Pain is not so severe, but trauma precipitates attacks of pain. The spine or one or more joints are involved. Atrophy is not so marked, and the X-ray shows marked lipping. Rarefaction of bone and the soft tissues have about the normal density. There is but slight tendency to fusion of the joints.

In both types the physiologic processes are below normal. Patients usually eat a diet that induces constipation—that is, a low vitamine, high starch diet. The intestinal tract becomes sluggish and most of the patients are constipated. The circulatory apparatus is sluggish, the peripheral capillaries become contracted, the extremities are cold and clammy. There is poor nutrition in the various joints, passive edemata occur, and later trophic changes appear with fibrosis and subsequent contractures.

Patients in such poor physical condition are naturally subject to various infections. The question seriously arises—"Are foci of infection the cause or the result of rheumatism?" Rheumatics do have foci of infection which require proper attention. In this connection we feel the foci should receive attention after the patient has been completely surveyed, and a real concept of the whole, true condition of the patient is had.

We have seen these untreated foci disappear when the general condition of the patient has been considerably improved by general treatment. We have also seen patients made much worse by the precipitate removal of foci of infection when they were in no condition to withstand added insult. Again, we have seen patients who have improved in their general condition and then been further greatly benefited by removal of foci.

The question of treatment, then, of a condition or series of conditions called rheumatism, necessarily demands that the plan of attack be comprehensive. To treat all arthritis with one principal treatment, one drug, or one vaccine is doomed to failure in any except an insignificant percentage of cases.

The treatment of these cases naturally falls into the hands of the general practitioner and internist. They should recognize the disease in its incipiency and promote a program of prevention based on the broad lines such as that for tuberculosis. This regime will produce superior results to that for tuberculosis.

Rheumatism is a curable disease, and if properly treated is a source of great revenue to the doctor. The old chronic cases will be troublesome, but the incipient cases are easily managed, and can be directed in a proper mode of living.

The principal factors in the treatment are rest, both mental and physical; proper elimination; a balanced diet, high in vitamines and low in sugar and starch content; and physical therapy, including proper massage, heat, correction of posture, and careful daily motion to the affected joints. Deformity is to be prevented by any endocrine disturbances corrected.

There are selected cases which are benefited by vaccines, and others by protein shock therapy. Iodides, salicylates and thyroid extract may be administered where the indications are clear. It is to be emphasized these measures are in addition to the above regime.

The orthopedic surgeon is of assistance to the internist and general practitioner in preventing deformities, or in correcting them after they have occurred, relieving contractures of muscles and joint capsules. He may remove spurs where particularly troublesome, remove joint "mice," perform arthoplasties where desirable, and arthrodese particularly painful joints where but a few degrees of motion are retained. He is useful in controlling efforts directed toward correcting faulty posture and

faulty weight bearing, and in supervising other physical therapy procedures.

Surgery is never indicated in the active state of the disease. Joints of the atrophic type should never be encased in plaster, but should be protected by removable splints which will permit daily massage and passive movement.

Conclusions

1. Rheumatism is a general systemic disease.
2. It has a leading role in producing disability and economic loss.
3. An active campaign should be waged, educating the public regarding the prevention of rheumatism, and in proper mode of living when individuals are once affected.
4. Many factors are found influencing the disease.
5. Treatment to be rational must comprehend these factors, and the plan of attack be directed to the correction of physiologic and physical deficiencies; providing mental and physical rest, a properly balanced diet, high in vitamines, and low in starch content, and in proper elimination. In other words, we must treat the patient and not the disease.

Professional Building.

LEPTOTHRIX BUCCALIS INFECTION.*

T. LATANE DRISCOLL, M. D., Richmond, Va.

My reason for this paper, which is more in the nature of a case report, is the fact that I, with my colleagues had difficulty in diagnosis.

The leptothrix belong in the classification of higher bacteria. Kuetzing proposed the term leptothrix to include four species of this organism. Leptothrix buccalis has received some attention in medical literature, and was first observed in springs containing iron, and subsequently found on the teeth of horses. Fundamentally, this is a subject for the botanist, but in view of the fact that this same organism occurs in humans, we must perforce take cognizance of it.

The leptothrix buccalis with which we are concerned is a filamentous structure, clubbed at one end, and tapering on the other, about 0.8 micron in thickness, and 10 microns long, which stains yellow with iodine. There is apparently no branching.

These structures may infect the tear ducts, pharynx, and other contiguous structures. In the case to be reported the area of infection was the tongue.

H. D. Student. Age 28. American.

Chief complaint: Sore tongue.

Past history: Essentially irrelevant.

Present history: Six weeks before consulting the writer, patient observed a soreness on either side of the frenum of the tongue, and this had lately become so annoying as to seriously interfere with his studies.

Upon examination there is presented an eroded area around frenum which is somewhat reddened, and slightly edematous, distinctly tender on pressure, with a suggestion of induration. There is nothing characteristic in this condition with which I am acquainted, and slides made from lesion show what the author takes to be leptothrix buccalis.

Patient was put upon solution of one-tenth part oil of cinnamon, locally applied, with very prompt response.

Bibliography

Kuetzing: *Glasgow Medical Journal*, January, 1927.

Broad-Grace Arcade Building.

*Read by title at the sixty-second annual meeting of the Medical Society of Virginia, in Roanoke, October 6-8, 1931.

Woman's Auxiliary, to the Medical Society of Va.

President—*Mrs. J. Allison Hodges*, 5511 Cary Street Road, Richmond.
President-Elect—*Mrs. W. P. McDowell*, Larchmont, Norfolk.
Secretary—*Mrs. James K. Hall*, 3011 Seminary Avenue, Richmond.
Treasurer—*Mrs. Reuben F. Simms*, 2034 Park Avenue, Richmond.

A Message from the President.

To the Members of the Auxiliary:

Before you disperse for the summer, I wish to inform you that the annual meeting of the Medical Society of Virginia will be held in Richmond, November 1st, 2nd, and 3rd. The Woman's Auxiliary is always held in conjunction with this meeting, so plan to come with your husbands. The weeks fly so swiftly that November will be here before we know it.

I am writing this note to urge that our members bear the Auxiliary upon their minds and hearts during their summer travels, and whenever possible, talk to the doctors' wives in any city, town, or county in Virginia that you may try to interest them in forming an

Auxiliary. Please send names and addresses of any prospects to our Chairman of Organization, Mrs. M. N. King, 1314 Westover Avenue, Norfolk, Virginia, or to the President. They will gladly follow up your efforts with letters of information and visits, if desired.

Never in the history of Virginia has the need for the care of the health of the people at large been so great as today, due to the lack of employment. Many are not getting proper nourishment and this with mental worry reduces their vitality and makes them very susceptible to diseases of all kinds.

We believe the Auxiliary can give real service in cooperating with the Medical Society and health officers in their efforts to improve health conditions in the State at this critical time. Make a survey of local conditions and do your part to improve them. Especially do we call your attention to the homes of the poorer classes—see if they are clean and sanitary. One bad section is a menace to the health of the whole community, and for your own safety, as well as their comfort, clean up these plague spots before it is too late.

Card Party

We are happy to report quite a nice sum was realized from the card party that the Richmond Auxiliary gave recently. The chairman of the tickets, Mrs. Andrew G. Shetter, reported 140 tables engaged, which proves that all of the committees worked with zeal and enthusiasm. We were blessed with a gorgeous spring day, the trees and flowers were at their loveliest and the playing on the lawn at Linwood Hall was a real joy.

The money will be used to help furnish the two lounge rooms in the new Academy of Medicine Building, which is fast nearing completion. The remarkable and very valuable collection of old medical books and prints presented to the Richmond Academy by Dr. Joseph L. Miller, an alumnus of the Medical College of Virginia, will be housed in this building, also the executive offices of the Medical Society of Virginia, and because of this, it will be Headquarters for the doctors of the State. All of the Auxiliaries in Virginia are urged to make a contribution, no matter how small, and thus have a part in furnishing this Medical Home. We hope to have the building finished and furnished in time to welcome the convention this Fall.

New Auxiliary

I attended a meeting, the morning of June 16th, that was of great interest to me, and, believing that our members will be interested also, I will report it briefly. The Old Dominion Medical Society, composed of the negro doctors of the State, held their annual meeting in Richmond, June 14th to 16th and, to my surprise, it has a Woman's Auxiliary. Dr. Roberts, of Roanoke, recently wrote, asking me to give him some information about the work of our Auxiliary and later I was asked to speak at this meeting. I found an earnest group of intelligent women, doctor's wives, who, five years ago, in Portsmouth, organized a Woman's Auxiliary, with branches in Richmond, Norfolk, Petersburg, and Roanoke. These women are studying health conditions in their localities and are trying to improve them, also they are supporting a bed at the Burkeville Sanatorium. They are well organized and deeply interested and I believe they can render a real service in public health work for the negroes of our State.

Miss Smith, who is doing such fine work in the Child Health Bureau, went to the meeting, at my request, and gave them a most instructive talk on the Five-Point Child, pre-school examination, etc., also told them what the State was doing for maternal welfare by having a course of instruction in the various counties for the midwives. There are 4,000 midwives in Virginia, 3,000 of which are colored. Many of them are entirely untrained and illiterate. This probably accounts in a great measure for the high mortality in childhood. Miss Smith gave out health booklets, etc. One of the special works of the Auxiliary is for bettering the conditions of prospective mothers.

Virginia, I believe, is the first State to report a colored Auxiliary, and we are glad to extend them a helping hand. We offer this new organization our congratulations for work accomplished and our best wishes for their future usefulness.

If I can be of any service to you during the summer, call upon me.

Mary Gray Hodges,
President.

Truth About Medicine

In addition to the articles enumerated in our letter of April 29th the following have been accepted:
Abbott Laboratories.
Tincture Metaphen 1:200.
Eli Lilly & Co.
Solution Liver Extract No. 343..
Ampoules Solution Liver Extract No. 343, 10 c.c.
E. R. Squibb & Sons.
Ampules Iodobismitol, 2 c.c.
The following article has been exempted and included with the List of Exempted Medicinal Articles (New and Nonofficial Remedies, 1931, p. 477):
Lederle Laboratories, Inc.
Sterile 1-1000 Solution Epinephrine Hydrochloride.

NEW AND NONOFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Diphtheria Shick Test Toxin, Diluted Ready for Administration—Gilliland.—A diphtheria toxin (New and Nonofficial Remedies, 1931, p. 383) made by growing diphtheria bacilli in broth, aging and diluting with peptone solution. The product is ready for use, without diluent. It is marketed in packages containing sufficient material for 10, 25 and 50 tests. Gilliland Laboratories, Inc., Marietta, Pa.

Diphtheria Toxoid—Gilliland.—A diphtheria toxoid (New and Nonofficial Remedies, 1931, p. 370) prepared from diphtheria toxin whose L+ dose is 0.20 c.c. or less by treatment with formaldehyde. The preparation is marketed in packages of one immunization treatment, in packages of ten immunization treatments, and in packages of fifteen immunization treatments. Gilliland Laboratories, Inc., Marietta, Pa.

Digalen Injectable—Roche.—Ampules containing 2.1 c.c. Each 2 c.c. represents 1 cat unit of digalen (New and Nonofficial Remedies, 1931, p. 136), in 8 per cent alcohol. Hoffman-LaRoche, Inc., Nutley, N. J.

Ampules Iodobismitol 2c.c.—Each 2 c.c. contains sodium iodobismuthite (Jour. A. M. A., February 13, 1932, p. 554), 0.12 Gm., sodium iodide 0.24 Gm., in ethylene glycol. E. R. Squibb & Sons, New York.

Solution Liver Extract No. 343.—A sterile aqueous solution of liver extract No. 343 preserved with 0.3 per cent of cresol. Each c.c. contains the active material derived from 5 Gm. of liver. The product is proposed for intramuscular injection in the treatment of pernicious anemia. It is supplied in 10 c.c. ampoules. Eli Lilly & Co., Indianapolis, Ind. (Jour. A. M. A., May 28, 1932, p. 1884.)

FOODS

The following products have been accepted by the Committee on Foods of the American Medical Association for inclusion in Accepted Foods:

Bromm's Kew Bee Bread (L. Bromm Baking Company, Inc., Richmond, Va.).—A white bread made by the sponge dough method. It is claimed to be a bread of good quality.

PROPAGANDA FOR REFORM

Montgomery, Ward & Company Withdraws Laboratory Service.—Following publication of the report of the A. M. A. Chemical Laboratory relative to its survey of the urine examining service conducted by Montgomery, Ward & Company many physicians wrote to the firm asking for an explanation of this project. In reply a letter by the president of Montgomery, Ward & Company has been sent to many physicians and stockholders in which it is stated that the urine analysis service has been discontinued. (Jour. A. M. A., May 21, 1932, p. 1813.)

Undulant Fever.—Several observers have reported favorable therapeutic results with specific Brucella melitensis (abortus) vaccine therapy. Two Brucella melitensis variety vaccines have been accepted for New and Nonofficial Remedies. (Jour. A. M. A., May 21, 1932, p. 1832.)

Boric Acid Harmful Internally.—Boric acid 1.3 Gm. (20 grains) taken internally for reducing purposes, would be decidedly harmful. (Jour. A. M. A., May 21, 1932, p. 1833.)

Glucosin.—The advertising circular for "Glucosin" is a typical example of pseudoscientific polyglandular therapeusis. The name of the promoter is not a familiar one to those in authority in the field of diabetes in America, and it is doubtful whether his Italian colleagues regard him as an authority. It should be evident that any one promising a "sure cure" of diabetes in six months must be a charlatan. (Jour. A. M. A., May 21, 1932, p. 1833.)

The International Treaty Controlling Narcotic Drugs.—On March 31st the United States Senate ratified the international treaty for limiting the manufacture of narcotic drugs. The treaty was the result of an international conference held at Geneva in 1931. The treaty should be far-reaching in its effect on preventing the smuggling of contraband drugs into this and other countries. The treaty does not weaken or relax existing American measures for the control of the legal use of these drugs, or those for the suppression of their abuses. The treaty deals with two phases: the limitation of the manufacture of narcotic drugs, and the strengthening of measures for their international control and distribution. (Jour. A. M. A., April 16, 1932, p. 1379.)

Book Announcements

A Speech for Every Occasion. New Speeches by A. C. EDGERTON, LL. M., Co-author of Thirty Complete Debates. Noble and Noble. New York City. Octavo of 436 xix pages. Cloth. Price, $6.00.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume the Fifty-third. Philadelphia. Printed for the College. 1931. Octavo of 317 pages. Cloth.

Plastic Surgery of the Nose, Ear and Face. By DR. VICTOR FRUHWALD, Ex-Assistant of the Nose, Throat and Ear Clinic in Vienna. Translated by GEOFFREY MOREY, M. B., B. S. (Adalaide), D. L. O. (London). Junior Surgeon Shropshire Nose, Ear and Eye Hospital (Shrewsbury). Vienna. Wilhelm Maudrich. 1932. Octavo of 86 pages. With 88 Illustrations. Cloth. Price, $4.00 postfree.

The Expectant Mother's Handbook. By FREDERICK C. IRVING, A. B., M. D., Professor of Obstetrics, Harvard Medical School; Visiting Obstetrician, Boston Lying-in Hospital. Boston and New York. Houghton Mifflin Company. The Riverside Press, Cambridge. 1932. 12mo. of 203-xii pages. With illustrations. Cloth. Price, $1.75.

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Editorial

Dr. Charles Rollin Grandy.

As we prepare editorial comment for this issue of the MONTHLY, word comes with the sad news of the death of a former president of the Medical Society of Virginia, Dr. Charles Rollin Grandy. The distressing news of Dr. Grandy's sudden and untimely death will bring grief to the members of the Medical Society of this state. The high purposes and the enthusiastic efforts of his administration, when he served so signally as president of this Society, distinguished Dr. Grandy as a man of unusual gifts in organization and leadership. He gave freely of his time in advancing the best interests of organized medicine in this state. He travelled over the state and endeavored to forward the work of local and county medical societies. He made especial effort to increase the usefulness of post-graduate study of medicine in this state. He took a leading part in shaping the plans that have been in operation more and more successfully in this state, whereby the active practitioner in the field may have, by various clinics and lectures, clinical medicine brought to him in his local community. Dr. Grandy, as President of the Society, took an especial and effective interest in the balancing of the budget of the finances of the Society. He made striking efforts to give new life to the sessions and the programs of the annual meetings. In fact one may say that as President of the Medical Society of Virginia, his services were of a high order and the effects of his wise administration will be carried through the coming years. His fine, clean, high, frank personality, always found aligned in the cause of the best humanities, will be long remembered by his host of friends. His name will be long revered for his great service to the profession, to the cause of prevention of disease in his native state.

Pellagra.

A recent analysis of 102 cases of pellagra by Boggs and Padget,* as abstracted in the *American Journal of Medical Sciences*, June, 1932, page 862, offers conclusions of interest on this malady. Such a study based upon the observations of an author during the course of twenty years brings interesting facts to the reader, now and then, seeing a case. These writers arrange a classification of pellagra that is easy of recognition and is borne out by their years of experience with this malady. They define three types: (1) simple pellagra; (2) post-alcohol variety; and (3) pellagra engrafted as a complication of some other disease. In the simple pellagra type, there were thirty-one, in the alcohol group there were forty, and in the third group there were thirty-one cases. It was noted by the authors that pellagrous lesions were not characteristic of the seasonal symptoms of the Spring. Most of the patients complained of dermatitis, diarrhea, and sore mouth, but one-fifth gave no signs on admittance characteristic of pellagra.

These authors point with special interest to

*Bulletin John Hopkins Hospital, 1932, 50, 21.

cases with a history of excessive use of alcohol: of the forty cases of this group, thirty-six entered the hospital after a spree lasting from four to six weeks, and the four remaining had used for a long period a daily ration of distilled liquor. These cases showed dermatitis, stomatitis, and diarrhea. Forty-five per cent showed spinal cord lesions, and one-half showed some type of psychosis. Anemia was found in 80 per cent of these cases. Practitioners may be on the alert for this type of pellagra in these hard times not only because of economic distress but also because of nutritional impoverishment. The alcoholic who eats very little food but takes more or less freely of alcohol throughout the day and over a long period of time, who shows "rough skin" on the dorsum of the hands and forehead, who has more or less mouth symptoms and bowel disturbance, may be in the initial symptomatology of pellagra. Alcoholic patients may show few of such lesions or symptoms, except spinal cord or psychic disturbances.

These authors make the important observation that in the question of treatment without the liver diet, in these cases, 69 per cent of the patients died. Of those on the liver diet, only 20 per cent died.

Vitamin A.

No longer can practitioners ignore a serious study of the present knowledge of the vitamins. For many years, much confusion in publications tended to give the casual impression that no definite conclusions had been arrived at, and the whole question of these dietary essentials had not been clarified sufficiently to possess practical values in every day practice. However, the time may be said to be well at hand for a practical study of this subject by all kinds of practitioners—not only pediatrists and internists, but all practitioners. The membership of the medical societies of the state organizations may now look for such an elementary and practical treatment of this general subject by a competent committee, authorized by the American Medical Association. In a special article of June 4, 1932, page 1981, the *Journal of the American Medical Association* announces that a series of articles on "Present Status of the Knowledge of Vitamins" is to be published. The subject matter of these articles has been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods, and, while opinions expressed are those of the authors, the publications are under the auspices of these joint Committees of the American Medical Association.

For a fairer statement of the general subject, no practitioner could wish a better agency whereby to reach an understanding of a subject such as this. This point in appreciation of the qualifications of the author may be no better illustrated than by noting that vitamin A is treated in the first article of the series by Lafayette B. Mendel, Sterling Professor of Physiological Chemistry, Yale University. Readers are urged to give careful perusal to the entire article. The story of the discovery of vitamin A is interesting to students of medicine and, in the opening pargraphs, Mendel discourses on these historical incidents. Then there is briefly outlined biologic tests employed in detecting vitamin A, by observing certain nutritive symptoms in animals that have subsisted on rations containing "the presence or absence of some source of vitamin A" as "the only variable factor."

Characteristics of the evidences of deficiency of vitamin A in diet bring the matter to a practical observation for the doctor. In young animals on nutrition deficient in vitamin A, interruption of growth is one of the first signs; eye symptoms—characteristic ophthalmia and xerophthalmia also stand out as spectacular signs of vitamin A deficiency. Then the occurrence of a tendency to respiratory infections, such as nasal and bronchial catarrh and pulmonary infection, is consequent upon the ration deficient in vitamin A. The animals show signs like sneezing, coughing, dyspnea and other respiratory signs. Certain animals under such a testing diet may show diseases of the glands of the mouth and of the renal passages as well. In addition to these phenomena, injury and deficiency of function to reproductive organs are noted and in the male sterility results.

Mendel explains to the reader the prevalent method of estimating the content of vitamin A in food. This discussion necessarily holds a certain academic interest for the practitioner and throws a light upon the complicity of such assays. The chemistry of vitamin A is described in plain terms as the author undertakes to unfold in popular terms this more or less difficult subject. It is of considerable importance to understand that vitamin A can be readily destroyed by oxygen or oxidizing agents at high temperatures. However, Men-

del affirms that recent studies indicate that "neither fruits nor vegetables lose appreciable amounts of vitamin A in home cooking or canning process. The vitamin A assay of cod liver oil preserved in the absence of air remains quite constant over periods of many months."

The reader may note in the following list a few common articles of diet, arranged according to their relative supply of vitamin A.

As an excellent source: Butter (high grade), carrots (raw), cod liver oil, cream, eggs, milk (cow's: fresh, dried, evaporated), spinach, watercress.

As a good source: Asparagus (green), beans (green), bread (whole meat; milk), cabbage (raw, green), carrots (cooked), cheese, corn (yellow), dandelion greens, lettuce, liver (beef), milk (human), orange juice, oysters, peaches, peas, potato (sweet), pumpkin, tomato.

Other items in food are given by Mendel under the titles of foods containing a fair amount and minimal or unappreciable amount of vitamin A.

Personality Problems for the Practitioner.

At the twenty-fifth annual meeting of the Southern Medical Association in New Orleans, last November, Roberts presented a thesis on Personality Pathology that may serve as a suggestion for comment here. At the end of a period, as it were, after thirty years of brilliant progress in scientific achievement in medicine, it might be quite appropriate for the practitioner to take cognizance of a field of approach to the distressed patient, that may have been all too much neglected by him in the rush of daily work. Roberts in detail portrays the complex wherein there is the disordered personality with disease of body and the disordered personalities seeking medical advice, unrelated to structural pathology within the body. The trend of medicine, with its diagnostic outlay in laboratory and hospital equipment, has been more to search for pathology and overlooked the deranged personality induced by environmental influences of the complainants.

As a text for such a discussion the author in minute detail elaborates in a descriptive amplification the fretting vexations found in the garrulous story of the distressed patient. For instance, the history of the second patient is depicted after this method of recording personality features: "He is an effeminate, pale, in-door boy, who, though 24, looked 20—Eyes were blue—hair light brown—fingers long and tapering—skin soft—a wistful face—struggling against fear—some half-hearted artist boy—uncertain—never found himself. He sleeps from 10:00 to 7:00—pushes a bookkeeping machine in an unimaginative—large corporation—from 8:30 to 5:00—30 minutes for lunch—enjoys walking with girls—church on Sunday. He is tired in evenings. He has a distended abdomen, belches, passes much gas—dull aching feeling in umbilicus,—pubis and small of back. He resents the way he has been treated by physicians; has taken medicine for seven months and ten days with no improvement—two series of X-rays—much laboratory work—could not afford to spend so much money," etc. So the appealing story goes, as Roberts draws the details from the patient. "This patient," says Roberts, "was a psychophysical problem—"

Robert pleads that the physician, the general practitioner, "does not need to be either an authority or even widely read in psychology to be capable of great service to this class of patients." An intelligent understanding of general principles in the field of psychology can but increase the usefulness of every medical man but the sort of superficial minutiae as one notes in popular magazines and newspaper articles—such "frothy nonsense and only the outer and lunatic fringes of a real psychology" is not helpful or dependable as an aid in medical inquiry of personality of patients. Practitioners may wisely apply themselves to physiologic psychology and thoughtfully inform themseleves upon the more or less normal functions of the mind in order that the pathologic personalities appearing before him in the chair of the consultation office may be the better interpreted and more skillfully treated. To decide whether one is dealing with pathology or functional misbehavior in the domain of personality is important to the practitioner. In these days of stress and strain when difficulties appear often quite insurmountable, one must find the path to well-being for the distressed, perplexed, and the cowed. To the "sick at heart," the practitioner must offer, based on a discerning understanding, the strength of a new purpose, quickened by cure of disease and by the rescue from the tangled cross-purposes of bodily dysfunction. The inferiority complex of a broken spirit or a wounded pride or a broken faith or an in-

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sidious disease process must be written off the pages of daily life if patients are to receive the full service of modern needs from the practitioners of these and future times. Physicians need not be widely read in psychology. Through observation, broad reading, a catholic interest in the problems of this day and time, a discriminating understanding of the difficulties of human nature, the general practitioner may render a high order of service to the baffled and broken patient who appeals for treatment. As practitioners swing into action in these days of economic hardships and mental depression, they must be armed with a strong purpose. They must pierce the superficial layer of personality pathology. They must destroy the bewildering effect of such fears. They must draw upon the deeper fountains of human nature. They must tap the deep veins of manhood and womanhood that lie inherent in the personality somewhere. That must be the larger effort of the practitioner of the immediate present and the future.

It is true we know only in part—we can prophesy only in part. But with all, we may take on new determination as we recall the swinging lines of Pope as he portrays man's strength and weakness alike.

"Know then thyself, presume not God to scan,
The proper study of mankind is man.
Placed on this isthmus of a middle state,
A being darkly wise, and rudely great:
With too much knowledge for the skeptic side,
With too much weakness for the stoic's pride,
He hangs between; in doubt to act, or rest;
In doubt his mind or his body to prefer;
Born but to die, and reas'ning but to err;
Alike in ignorance, his reason such,
Whether he thinks too little or too much;
Chaos of thought and passion, all confused;
Still by himself abused or disabused;
Created half to rise and half to fall;
Great lord of all things, yet a prey to all;
Sole judge of truth, in endless error hurled,
The glory, jest, and riddle of the world."

Department of Clinical Education

Post-Graduate Clinics at the Medical College of Virginia.

Both the clinicians and the physicians attending considered the Post-Graduate Clinics at the Medical College successful, according to the report of Dr. Fred J. Wampler, Chairman of the Committee.

The program consisted of six clinics: (1) Pediatrics, by Dr. Lee Sutton, Jr. (2) Medical, by Drs. W. B. Porter, J. Morrison Hutcheson, William H. Higgins, and D. C. Ashton. (3) Surgical, by Drs. I. A. Bigger, C. C. Coleman, G. Paul LaRoque, and Carrington Williams. (4) Symposium on Fungus Diseases—Etiology and Pathology, by Dr. Frederick W. Shaw; Respiratory Tract, by Dr. E. C. Harper; Intestinal Tract by Dr. J. Powell Williams; Rectum and Anal Region, by Dr. E. H. Terrell; Skin and Appendages, by Dr. Thomas W. Murrell. (5) Symposium on Pellagra—Etiology, by Dr. J. H. Smith; Nervous Manifestations, by Dr. B. R. Tucker; Treatment, by Dr. W. B. Porter; Prevention of Pellagra and other Deficiency Diseases, by Dr. F. J. Wampler. (6) Obstetrics, by Dr. H. H. Ware, Jr.; discussion by Dr. M. E. Lapham.

The dates, May 27th and 28th, proved unsuitable in many cases and apparently limited the attendance. Change to a more convenient season is being considered for the next clinics.

The physicians registered were:

AYLETT—Dr. A. W. Lewis.
BEDFORD—Dr. C. H. Bondurant.
BERRYVILLE—Dr. C. H. Iden.
BOWLING GREEN—Dr. John G. Broaddus.
CHARLOTTESVILLE—Dr. M. E. Lapham.
COVINGTON—Dr. N. B. Jeter.
CULPEPER—Dr. O. K. Burnette.
ELKTON—Dr. M. T. McCulloch.
FLOYD—Dr. R. M. DeHart.
FOREST—Dr. B. A. Rice.
HAMPDEN-SYDNEY—Dr. Ray A. Moore.
HILLSVILLE—Dr. J. G. Cox.
JETERSVILLE—Dr. James M. Habel.
LOTTSBURG—Dr. R. E. Booker.
LYNCHBURG—Dr. John Hundley, Jr.
MCKENNEY—Dr. R. H. Manson
MILLER'S TAVERN—Dr. E. L. W. Ferry.
NEWTOWN—Dr. R. D. Bates.
PETERSBURG—Dr. F. J. Wright.
Dr. John R. Gill.
RICHMOND—Dr. J. J. Anderson.
Dr. M. B. Baughman.
Dr. J. C. Blanton.
Dr. M. O. Burke.
Dr. E. L. Copley.
Dr. Thomas F. Gill.
Dr. Oscar L. Hite.
Dr. R. Main.
Dr. Edward McCarthy.

Dr. C. L. Outland.
Dr. B. E. Strode.
STAUNTON—Dr. Charles W. Putney.
SUFFOLK—Dr. J. L. Rawls.
WASHINGTON, D. C.—Dr. A. Ray Dawson.

GEO. W. EUTSLER,
Executive Secretary,
Department of Clinical Education.

Prenatal and Postnatal Care.

With three of the ten meetings in the first series of post-graduate courses in prenatal and postnatal care completed, the enrollment of physicians has reached a total of seventy-five. Their attendance rate is slightly lower than five out of six, a rate which would be about nine out of ten if the entire absence of six members could be disregarded. Seventeen other physicians have visited the classes one or more times and increased the average attendance each week to 67.3. The classes have attracted still other visitors, a medical missionary, medical students, public health and hospital nurses and a public health official.

Not only the enrollment and the regular attendance but the interest manifested in the lectures, demonstrations and round-table discussions have given gratifying indication of the success of the course. Almost without exception physicians approve the general plan of post-graduate educational opportunities, but the supreme test comes when the actual presentation of a specific subject must measure up to their needs and demands. Unsolicited notes of appreciation, repeating the terms "interesting and enjoyable," "practical," "valuable," "profitable," show that this program bids fair to fulfill in marked degree the purposes for which it was established.

In two other respects a favorable start can be reported. Through the cooperation of members of the groups, clinical material, upon which much of the effectiveness of the course depends, has been made available in every case except one. Furthermore, Dr. Lapham, the Field Clinician, is receiving an increasing number of requests for examination of patients at the offices of physicians in his classes. Dr. Lapham sees no patients without the recommendation of a physician and communicates with them only through the physician. His out-of-class hours will be devoted to such consultations for educational purposes without cost, and the Joint Committee invites full use of his services.

Complete data upon the classes now being conducted in the circuit follow:

NELSON COUNTY—Previously reported enrollments: Drs. Miller, Randolph, Thaxton, Wills. Additional enrollments: Drs. Dickie, Everett, Horsley, Kidd, Tunstall. Total enrollments, 9. Average attendance, 8.3. Percentage of attendance, 92.6.

LYNCHBURG (AMHERST, APPOMATTOX, BEDFORD AND CAMPBELL COUNTIES)—Previously reported enrollments: Drs. Oglesby and Plunkett. Additional enrollments: Drs. J. P. Clark, C. W. Haden, Geo. T. Harris, J. H. Hoskins, John Hundley, Jr., P. G. Hundley, W. C. Rosser, J. A. Rucker, W. O. Tune, R. B. Ware. Visiting physicians: Drs. C. H. Bondurant, J. W. Davis, A. M. Owen, M. P. Rucker, E. M. Sandidge, R. M. Taliaferro, David N. Twyman, John Walker, Walter L. Williams, E. F. Younger. Total enrollments, 12. Average attendance, 13.3. Percentage of attendance of those enrolled, 76.5.

LEXINGTON (BATH, BOTETOURT AND ROCKBRIDGE COUNTIES)—Previously reported enrollments: Drs. Bailey, H. R. Coleman and H. R. Coleman, Jr., Cooke, Leech, Loyd, McClung, Seebert, Thurman, Tompkins, White. Additional enrollments: Drs. E. W. Dodd, T. F. Kennan, Geo. A. Torrence. Visiting physicians: Drs. C. S. Groseclose, W. A. Jeffress and M. T. Vaden. Total enrollments, 14. Average attendance, 10.7. Percentage of attendance of those enrolled, 70.

STAUNTON (AUGUSTA AND HIGHLAND COUNTIES)—Previously reported enrollments: Drs. Bradford, Campbell, Hartman, Murphy, Payne, Putney, Robertson, Roller, Tynes and Womack. Additional enrollments: Drs. C. B. Fox, J. F. Hubbard, H. G. Middlekauff, C. P. Obenschain, T. R. Rolston, J. B. Stone, J. F. Stover, H. F. White. Visiting physician: Dr. Q. H. Barney. Total enrollments, 18. Average attendance 16.3. Percentage of attendance of those enrolled, 95.5.

CHARLOTTESVILLE (ALBEMARLE, FLUVANNA, GREENE, LOUISA AND MADISON COUNTIES)—Previously reported enrollments: Drs. Harris, McQuade, Macon, Nokes, Rea, Williams. Additional enrollments: Drs. F. J. Clements, J. C. Coulter, H. S. Daniel, T. H. Daniel, E. D. Davis, E. D. Davis, Jr., W. A. Kyger, J. O. Mundy, R. L. Page, Geo. W. Parrott, E. B. Pendleton, H. W. Porter, C. F. Ross, J. W. R. Smith, E. A. Terrell, J. H. Yeatman. Visiting physicians: Drs H. L. Baptist, L. G. Roberts, R. L. Taliaferro. Total enrollments, 22. Aver-

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age attendance, 18.7. Percentage of attendance of those enrolled, 76.2.

Future Courses in Prenatal and Postnatal Care.

The Joint Committee has designated the area surrounding Richmond and Farmville for the second circuit of courses. The centers tentatively decided upon, subject to the approval of the local medical societies, are Richmond, Petersburg, Hopewell, Lawrenceville and Farmville; the period is August 22nd to October 28th. The preliminary steps to secure approval of the societies and begin the work of organization have been entered upon.

Because an interval of two weeks between the first and second circuits is permitted by the relatively late date for the annual meeting of the Medical Society of Virginia, the Joint Committee has investigated the possibility of a two weeks' intensive course on the Eastern Shore. By permission of Drs. Doughty and Denoon, presidents of the Accomac and Northampton Societies, most of the members were interviewed. Generally the proposal was received with great cordiality. Eleven physicians have enrolled for the course, and the details of organization will be completed when approval is formally voted by the societies. The dates for these meetings are August 8th-19th. The class will meet, at least in the beginning, in the Northampton-Accomac Memorial Hospital at Nassawadox.

Two additional circuits of five centers are planned by the Joint Committee for the fall and winter months. Choice of the centers will depend, as usual, upon the favorable action of local medical societies, and also upon the interest and demand manifested. It is fundamental to the success of a long-time educational undertaking, which it is hoped will include in the future additional branches of medicine, that local societies sponsor and arrange for the courses as a project of their own. Not only is the high expense of personal visitation saved by this method, but the society is strengthened and enabled to carry forward other educational programs more effectively. Representatives of the University of Virginia Extension Division, as the administrative agency of the Joint Committee, stand ready to attend medical society meetings for the purpose of explaining the course.

In the case of the present program there is probably a premium upon early organization. The expenses for the first year are entirely cared for by the appropriation of $2,500 made by the Medical Society of Virginia at Roanoke and the grant of $10,000 from the Commonwealth Fund. The Joint Committee felt it was advisable to establish at the beginning of the courses the principle of partial self-support by the students themselves, and for that reason it has set an enrollment fee of $5.00 per student for the course during the first year. For the proposed second and third years required to place this educational opportunity in every section of the state where it is desired, the grant of the Commonwealth Fund is tentative and reduced in amount. If an increase in the enrollment fee should become necessary, only the students during the first year will have the advantages of the minimum rate. Officers and members of societies in consideration of this fact are urged to begin arrangements for offering the course to their colleagues as promptly as possible.

Further information concerning the course will be furnished upon application. Descriptive folders for prospective students and the mimeographed lectures of the Field Clinician, as well as instructions to patients and blank cards for prenatal examinations, are available in reasonable quantities.

GEO. W. EUTSLER,
Secretary Joint Committee.

Proceedings of Societies

The Rockbridge County Medical Society

Held its regular quarterly meeting on May 18th, at the Jackson Memorial Hospital, Dr. F. L. Thurman presiding. He introduced Dr. M. E. Lapham, who came under the auspices of a Joint Committee of the Medical Society of Virginia, the Medical College of Virginia and the University of Virginia, and in a most interesting talk told this society of the project for a course of instruction in pre-natal and post-natal care. He was followed by Mr. George W. Eutsler, secretary of the Joint Committee, who went into some details on the same subject.

Dr. Thurman next introduced Dr. Don. Peters, surgeon to the State Colony for Epileptics and Feebleminded, who gave a very enlightening address, his subject being "Sterilization Under the Law."

On June 1st, Dr. M. E. Lapham gave the first of the series of lectures in Lexington, this being a course of instruction in pre-natal and post-natal care of mother and child. These lectures will continue at weekly intervals for ten weeks. Considerable interest in this matter has been shown by the doctors in Rockbridge and adjacent counties, and a goodly number were on hand to hear the lecture, and the questions asked afterward showed that the subject was one that appeal to those present.

E. P. Tompkins, *Secretary.*

The Wise County Medical Society

Held its regular meeting at Norton, Va., on May 25th. They had an exceptionally good program as follows: The Treatment of Abdominal Injuries, by Dr. Jas. Williams, Richlands; Progress in the Treatment of Eclampsia, by Dr. D. O. Hamblin, Pennington Gap; Colles Fracture, by Dr. Fred M. Duckwall, Kingsport, Tenn., and The Etiology and Treatment of Non-Infectious Diarrheas of Infants, by Dr. S. H. Rivers, Calvin. Following this program, dinner was served at the Hotel Norton.

Dr. T. J. Tudor, Norton, is president of this society, and Dr. W. R. Culbertson, also of Norton, is secretary.

The Norfolk County Medical Society,

At its annual meeting, on June 6th, elected its delegates and alternates for the Richmond meeting of the Medical Society of Virginia and elected officers for the coming year. These are: President, Dr. Joseph D. Collins, Portsmouth; vice-president, Dr. W. P. McDowell, Norfolk, and secretary-treasurer, Dr. Lockburn B. Scott, of Norfolk. Dr. Scott is now entering upon his twelfth consecutive year in this office.

The Roanoke Academy of Medicine

Held its fourth hospital meeting for the current year at the Jefferson Hospital, Roanoke, Va., on June 6th, at 8:30 P. M. Dr. A. P. Jones was in charge of the program which was presented by members of the staff. The program was as follows:

Gall-Bladder Disease: A Comparison of Roentgen Ray and Operative Findings—Dr. C. H. Peterson.

Recurrent Ectopic Pregnancy—Dr. A. P. Jones.

Duplication of the Gall-Bladder—Dr. F. G. Slaughter.

Electrocardiographic Studies—Dr. G. B. Lawson.

Methods of Prognosis in Cancer of the Breast—Dr. A. F. Doyle.

Post-Operative Adhesions—Dr. H. A. Wilgis.

What We Have Accomplished with Good Milk—Dr. R. H. DuBose.

Resumé of 1932 Meeting of the American Surgical Association—Dr. H. H. Trout.

Dr. John A. Pilcher was elected to membership.

C. H. Peterson, M. D.,
Secretary-Treasurer.

The Piedmont Medical Society

Held its last meeting at Orange, Va., on June 2nd, with an attendance of forty. The scientific program included the following papers, all of which were discussed:

Benign Tumors of the Chest—Dr. E. C. Drash, University.

The Prevention of Measles—Dr. W. W. Waddell, University.

Problems of the Country Practitioner—Dr. F. G. Scott, Orange.

Officers elected for the ensuing year are: President, Dr. Percy Harris, Scottsville; vice-president, Dr. H. B. Mulholland, University, and secretary-treasurer, Dr. W. E. Bray (re-elected), University.

Southside Virginia Medical Association.

The regular meeting of this association was held on June 14th, at Suffolk, Va. The visiting doctors were cordially welcomed by Col. J. E. West, and Dr. R. L. Raiford, Franklin, responded to this address. There were about fifty doctors present and all the papers on the program were read and freely discussed.

A most interesting feature of the afternoon session was a paper on Childhood Type of Tuberculosis, by Dr. J. H. Smith, of Farmville. Following this, Dr. C. H. Dawson, Suffolk, gave an exhibition of children with tuberculin reactions. After this scientific program, the visiting doctors were entertained by the Suffolk profession at a delightful dinner.

The next meeting of this Association will be held on the second Tuesday in September, at Piedmont Sanatorium, Burkeville, Va. Dr. W. W. Wilkinson, La Crosse, is president, and Dr. R. L. Raiford, Franklin, secretary.

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News Notes

Medical College Finals.

MEDICAL COLLEGE OF VIRGINIA

The ninety-fourth Commencement exercises of the Medical College of Virginia were held in Richmond from May 28th to 31st, inclusive. These opened with Student Night on May 28th in the form of dramatics in the Woman's Club auditorium. The Commencement sermon was given on the following evening by Rev. Dr. F. W. Burnham, at the Seventh Street Christian Church.

Monday was Alumni Day. Following a buffet luncheon for the Board of Visitors, Alumni, and Senior Classes at Cabaniss Hall, there was the golf tournament between members of the faculty and alumni. The annual meeting was held just after the Alumni dinner at the Commonwealth Club, that evening. Dr. J. Morrison Hutcheson, Richmond, was elected president of the Association for the coming year, succeeding Dr. J. M. Northington, of Charlotte, N. C. Dr. W. N. Hodgkins, Warrenton, Mr. Harry Brown, Dr. T. W. Wood, and Miss Pansy Fletcher, all of Richmond, were elected vice-presidents; and Drs. F. H. Beadles and C. L. Outland, both of Richmond, were continued as treasurer and secretary, respectively. On this occasion, the student body presented the College a portrait of the late Eppa Hunton, Jr., past president of the Board of Visitors, Dr. Stuart McGuire making the presentation for the students and Dr. W. T. Sanger, president, accepting it for the College; Dr. R. J. Walker, youngest member of the 1932 class, presented a silver loving cup on behalf of the alumni to Dr. W. J. Strother, who graduated sixty-one years ago and is the oldest alumnus of the College; and General Walter Drew McCaw, of Woodstock, who returned for his fiftieth commencement program was presented a silver cup by Dr. Roshier W. Miller, on behalf of the alumni, and at the closing exercises on the following day received the honorary degree of doctor of science.

The final exercises were held at the Mosque Theatre on the afternoon of the 31st, at which time Dr. William D. Cutter, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, was the principal speaker. Dr. Sanger announced that a number of gifts had been made to various features of the College work. The annual reception and dance were held at Commonwealth Club at 9:00 P. M. that evening.

There were 161 in the graduating classes of the College, this year, ninety-one of these being in medicine. Their names with hospital appointments are given below:

MEMORIAL HOSPITAL, RICHMOND—Drs. Nathaniel Talley Ballou, Jr., Richmond; Nathan Bloom, Richmond; Richard Colbert Cecil, Bramwell, W. Va.; Winston Tucker LaNeave, Jr., Portsmouth, Ohio; Everett Walker McCauley, Union Ridge, N. C.; Duncan Roland McEachern, Wilmington, N. C.; Walter Lewis Nalls, Alexandria; Euston Spencer Robertson, Alcoma; William Mayer Robinson, Richmond; Lee Barnhardt Todd, Newport News; William Lawrence Weaver, Front Royal.

JOHNSTON-WILLIS HOSPITAL, RICHMOND—Drs. Holmes Gantt Byrd, Tazewell; Hawes Campbell, Jr., Enfield; Andrew Mathews McLaughlin, Richmond.

RETREAT FOR THE SICK, RICHMOND—Drs. Joseph Allen Eason, Hickory; Earle Carlton Gates, Highland Springs.

ST. LUKE'S HOSPITAL, RICHMOND—Drs. Frederick Lionel Finch, Jr., Brooklyn, N. Y.; John Hampton Miller, Thomas, W. Va.

SHELTERING ARMS HOSPITAL, RICHMOND—Dr. James Massie Gleason, Farmville.

GRACE HOSPITAL, RICHMOND—Drs. Richard Sterling Herring, Clinton, N. C.; Allen Whedbee Lane, Tarboro, N. C.

TUCKER SANATORIUM, RICHMOND—Dr. John Moses Mewborn, Snow Hill, N. C.

STUART CIRCLE HOSPITAL, RICHMOND—Drs. Albert Thomas Repass, Richlands; Charles Neill Scott, Smithfield, W. Va.

ST. ELIZABETH'S HOSPITAL, RICHMOND—Dr. Robert Jeffreys Walker, Jr., Tarboro, N. C.

NORFOLK PROTESTANT HOSPITAL, NORFOLK—Drs. Milton Hamlin Bland, Crewe; Karl Kenneth Wallace, Charleston, W. Va.

ST. VINCENT'S HOSPITAL, NORFOLK—Drs. Stephen Casagrande, Brooklyn, N. Y.; Carroll Spencer Credle, Swan Quarter, N. C.; Cornelius Eugene Gorman, Lynchburg; Stanley Hobson Powell, Portsmouth; Thomas Eldridge Stanley, Beaver Dam.

U. S. MARINE HOSPITAL, NORFOLK—Dr. Cy Kellie Lynn, Hickory, N. C.

LEWIS GALE HOSPITAL, ROANOKE—Drs. Hal

Davis, Roanoke; Walter Albert Porter, Monarat.

Roanoke General Hospital, Roanoke—Drs. Henry Merritt Escue, Tornado, W. Va.; Wade Hampton Saunders, Roanoke.

Elizabeth Buxton Hospital, Newport News—Dr. Murray Dick, Newport News.

Chesapeake & Ohio Hospital, Clifton Forge—Dr. Harold Bryan Damron, Clintwood.

Cheaspeake & Ohio Hospital, Huntington, W. Va.—Drs. Robert Guy Backwelder, Richmond; Rodolph Hedley Fowlkes, Chatham; Bruce Henderson Pollock, Huntington, W. Va.

Charleston General Hospital, Charleston, W. Va.—Drs. Charles Allen Easley, Jr., Chatham; George W. Grafton, Divide, W. Va.; Ralph Everett Pence, Pasco, Wash.; George Douglas Vermilya, Clifton Forge.

Kanawha Valley Hospital, Charleston, W. Va.—Dr. Thomas Gideon Faison, Richmond.

St. Joseph's Hospital, Parkersburg, W. Va.—Dr. Russell Felt Hufford, Welch, W. Va.

St. Mary's Hospital, Huntington, W. Va.—Dr. Frank Hogan Penn, Jr., MacDonald, W. Va.

Bluefield Sanitarium, Bluefield, W. Va.—Dr. Charles Tiffany St. Clair, Jr., Bluefield, W. Va.

Hazleton State Hospital, Hazleton, Pa.—Drs. John Bryan Haven Bonner, Raleigh, N. C.; Younger Lovelace Power, Sycamore.

Hamot Hospital, Erie, Pa.—Dr. Chase Gray Gage, Cambridge Springs, Pa.

Allegheny General Hospital, Pittsburgh, Pa.—Dr. George Randolph Wilson, Rochester, Pa.

St. Joseph's Hospital, Reading, Pa.—Dr. James Marshall Winkfield, Winchester.

Gallinger Municipal Hospital, Washington, D. C.—Drs. Willard Cardwell, Lynchburg; Rupert Spencer Eaves, Jr., Rutherfordton, N. C.

Garfield Memorial Hospital, Washington, D. C.—Dr. Beverly Wilkins Nash, Baynesville.

N. C. Baptist Hospital, Winston-Salem, N. C.—Drs. Alexander McNeil Cox, Greensboro, N. C.; Joshua Jack Grizzard, Jr., Branchville.

City Memorial Hospital, Winston-Salem, N. C.—Drs. John William Griffis, Natural Bridge Station; Herman Sutton Powell, Enfield, N. C.

James Walker Memorial Hospital, Wilmington, N. C.—Dr. James Nelson Dawson, Kinston, N. C.

Wilmington General Hospital, Wilmington, N. C.—Dr. Lloyd Samuel Hayes, Morgantown, W. Va.

Rex Hospital, Raleigh, N. C.—Drs. John Ralph Johnson, Clayton, N. C.; William Wesley Stanfield, Creedmoor, N. C.

Elyria Memorial Hospital, Elyria, Ohio—Dr. Rodolfo Frank Fasoli, Stamford, Conn.

White Cross Hospital, Columbus, Ohio—Drs. Paul Douglas Hayman, Huntington, W. Va.; Beecher Love Smith, Huntington, W. Va.

St. Elizabeth's Hospital, Youngstown, Ohio—Dr. Emery George Kyle, Youngstown, Ohio.

Peoples Hospital, Akron, Ohio—Dr. Samuel Howard Mirmelstein, Newport News.

Holy Name Hospital, Teaneck, N. J.—Dr. Robert Bryan Hillsman, Richmond.

North Hudson Hospital, Weehawken, N. J.—Dr. Maurice Kamp, West New York, N. J.

Orange Memorial Hospital, Orange, N. J.—Dr. Paul Sherwin Richards, Butler, N. J.

Jersey City General Hospital, Jersey City, N. J.—Dr. James Stephen Vermillion, Welch, W. Va.

Baroness Erlanger Hospital, Chattanooga, Tenn.—Drs. Jesse Frank Hobbs, Edenton, N. C.; Joseph Halford Patterson, Broadway, N. C.

Municipal Hospital, San Juan, Porto Rico—Dr. Rafael Rufino Muniz, Anasco, P. R.

Scott White Clinic, Temple, Texas—Dr. Paul Dalton Rudd, Brown Summit, N. C.

Santa Rosa Hospital, San Antonio, Texas—Dr. John William Worsham, Hopewell.

Municipal Hospital, Hartford, Conn.—Dr. Eugene William Senter, Bristol.

Other graduates in medicine are:

Dr. Benjamin Drake Bosworth, Portsmouth.

Dr. Randolph Lee Clark, Jr., Cisco, Texas.

Dr. Bertha Margaret Davis, Asheville, N. C.

Dr. Scott Arthur Ford, Talcott, W. Va.

Dr. Robert Edwin Harris, Logan, W. Va.

Dr. Lewis Ellsworth Jarrett, Richmond.

Dr. Sydney Levy, Richmond.

Dr. Potter Abraham Richards, Pensacola, Fla.

Dr. David Winston Ruffin, Powellsville, N. C.

Dr. Lacy Lee Shamburger, Biscoe, N. C.

University of Virginia
Department of Medicine

Finals for the Medical School of the University were held in conjunction with those of the other departments and were enjoyable as always. Several dances and other entertainments enlivened the occasion. Commencement exercises got in full swing with the baccalaureate sermon on June 12th, by Bishop Francis J. McConnell, of the Methodist Church. That afternoon, there was an organ recital in the amphitheatre of Cabel Hall by Prof. H. R. Pratt, of the McIntire School of Music.

The Alumni Association held its annual business session on Monday at which time appropriate addresses were made, welcoming the 1932 graduates. All five-year classes from 1882 to 1927 were invited to hold class reunions at the University, this year. On the 13th, the forenoon was set aside for class reunions in an informal way. There was an open air luncheon, and individual class dinners in the evening, followed by an informal dance in the Memorial gymnasium. This was considered the most successful reunion since the centennial celebration in 1921. There were about 250 alumni present, the largest representation being from the class of 1902, with the class of 1922 coming second.

On the 14th of June, Maj. Leroy Hodges managing director of the Virginia State Chamber of Commerce, was the principal speaker at the graduation exercises which followed a formal academic procession. This was the second largest class in the history of the University, there being 357 to receive degrees. Forty-nine of these were in the Department of Medicine and are given below with hospital appointments:

University of Virginia Hospital, University—Drs. James Beebe Hawes, Huntington, W. Va.; Robert Beall Hightower, Stanton, Miss.; Leland Floyd Hobbs, Norfolk; Robert Tasker Humphries, Culpeper; Jean Barksdale Jones, Petersburg; Edgar Wilson Kirby, Jr., Portsmouth; John Edmund Roberts, Alexandria; Elizabeth Lewis Saunders, Blacksburg; Munford Radford Yates, Lynchburg; and Francis Arthur Snidow, Pearisburg.

University of Virginia, Department of Pathology—Dr. Walter Ansell Derrick, Pulaski (Instructor).

Protestant Hospital, Norfolk—Drs. Robert Ruben Coleman and Phillip Louis Miller, Norfolk.

Jefferson Hospital, Roanoke—Dr. John Randolph Perdue, Rocky Mount.

Johnston Memorial Clinic, Abingdon—Dr. John Peyton Snead, Jr., Washington.

Memorial Hospital, Richmond—Dr. Hugh Otto Staley, Rural Retreat.

Stuart Circle Hospital, Richmond—Dr. Frank Andes Strickler, Bridgewater.

Church Home and Infirmary, Baltimore, Md.—Drs. Frank Dunnington Daniel, Charlottesville; and James Lawson Cabaniss, Bedford.

Bon Secours Hospital, Baltimore, Md.—Dr. Jack Leon Canter, Petersburg.

Johns Hopkins Hospital, Baltimore, Md.—Dr. William Dabney Jarman, Farmville.

Baltimore City Hospital, Baltimore, Md.—Dr. Robert Faber Martin, Faber.

Duke University Hospital, Durham, N. C.—Dr. Clarence Dearborn Freeman, Jr., Portsmouth.

Lakeside Hospital, Cleveland, Ohio—Drs. Austin Brockenborough Chinn, Warsaw; John Walter Davis, Jr., Hampton; and John Hartwell Harrison, Danville.

Peoples Hospital, Akron, Ohio—Dr. Emanuel Greenspon, Newport News.

Massachusetts General Hospital, Boston, Mass.—Dr. Thomas Sterling Claiborne, Greenwood, Miss.

Boston City Hospital, Boston, Mass.—Dr. Randolph Bryan Grinnan, Jr., Norfolk.

Virginia Mason Clinic, Seattle, Wash.—Drs. George Henry Derieux, Jr., Tappahannock; Delmar Franklin Weaver, Jr., Orange; and Joseph Edgar Young, Jr., Greensboro, N. C.

Garfield Memorial Hospital, Washington, D. C.—Drs. Herman Lenowitz, Charlottesville; and George Garland Tanner, Brightwood.

Gallinger Municipal Hospital, Washington, D. C.—Dr. Henry Rolfe DuPuy, Norfolk.

Orange Memorial Hospital, Orange, N. J.—Drs. Wesley Fry, Charlottesville; and Melvin Wood McGehee, Carbon, W. Va.

Medical Center, Jersey City, N. J.—Dr. Clifton Jean Strauss, Belleville, N. J.

Mercer Hospital, Trenton, N. J. — Dr. Edward Knapp Hawke, Pennington, N. J.

St. Luke's Hospital, New York, N. Y.—Drs. Chas. Louis Gilbert, Richmond; and Hugh Grigsby Whitehead, Jr., Norfolk.

Post-Graduate Hospital, New York, N. Y.—Drs. Frederick Dixon Hollowell, Jr., Yazoo City, Miss.; Charles Morris Nelson, Richmond; and Robert Edward Westmoreland, Petersburg.

Tennessee Coal and Iron Hospital, Birmingham, Ala.—Dr. William Beverley Wilkins, Alexandria.

DePaul Hospital, St. Louis, Mo.—Dr. John Cameron McCluer, Jr., University.

Geisinger Memorial Hospital, Danville, Pa.—Dr. Carl Herbert Myerley, Danville, Pa.

University Hospitals, Iowa City, Iowa—Dr. Wilson Thomas Sowder, Rocky Mount.

Dr. Robert Stephen Millen, Malden, Mass., was also a member of the graduating class.

Thirty students and six alumni, elected this year to the Phi Beta Kappa national honorary fraternity, were initiated at the exercises on Monday evening. One of the alumni chosen for this honor was Dr. William Tate Graham, Richmond, Va., and the four medical graduates are Drs. Thos. Sterling Claiborne, Greenwood, Miss., Chas. Louis Gilbert, Richmond, Jean Barksdale Jones, Petersburg, and Elizabeth Lewis Saunders, Blacksburg.

Richmond is Calling You!

Your State Medical Society convenes in less than five months. Preparations for an enjoyable as well as profitable meeting are going ahead.

November is a glorious month in Richmond, and local golf courses are at their best in the fall. Don't forget your golf clubs.

Delightful entertainments are being arranged for the ladies.

The Scientific Program is taking shape and bids fair to be excellent.

Don't forget! The first week in November.

Program for Richmond Meeting.

Apropos to the above from the local committee, the Program Committee of the Medical Society of Virginia has selected Diseases of the Heart as the subject for its symposium at the Richmond meeting. This has been divided into four parts: Etiology and Prevention of Heart Disease; Acute and Subacute Endocarditis; Diagnosis and Treatment of Coronary Disease, and The Use of Drugs in Heart Disease. Papers on these subjects will be prepared and read respectively, by Dr. J. Edwin Wood, University; Dr. Walter B. Martin, Norfolk; Dr. George B. Lawson, Roanoke, and Dr. W. B. Porter, Richmond. Drs. Manfred Call, Richmond, and B. M. Randolph, Charlottesville, have been invited to open the discussion on these papers.

As an innovation, if sufficient interest is shown, there will be a *Question Box*, the questions to be answered at a set meeting.

Letters have just been mailed all members, asking for titles from those who wish to offer papers at this meeting. This letter also requests that any questions for the Question Box should be in the Secretary's hands by September 1st, that arrangements may be made for having them answered.

Be sure to accept the Local Committee's invitation to attend this meeting.

Doctors Interested in Civic Affairs.

There seems an increasing interest on the part of doctors in civic affairs, judging by the number elected to offices in the recent elections held throughout Virginia. Some of the doctors elected as mayors in their respective cities are: Dr. J. Fulmer Bright, Richmond; Dr. Charles R. Anderson, Winchester; Dr. W. N. Breckinridge, Fincastle; and Dr. M. C. Newton, Narrows.

Doctors' names noted among the list of city councilmen in their various cities are: Dr. Albert E. Wilson, Norfolk; Dr. S. B. Moore, Portsmouth; Dr. W. T. Chitwood, Rocky Mount; Dr. S. B. Perry, Hopewell; and Dr. R. S. Griffith, Waynesboro.

In Richmond, Drs. Roshier W. Miller and Clifton M. Miller were elected members of the City School Board; Dr. R. T. Hawks, Carson, was re-elected a member of the School Board of Prince George County; and Dr. P. W. Miles has been re-elected a member of the Board of School Trustees of Danville.

Library Building of Rchmond Academy of Medicine Nearing Completion.

The handsome new red brick building, being erected in this city to serve as headquarters of the Richmond Academy of Medicine and to house the splendid library and relics given the Academy by Dr. Joseph L. Miller, of Thomas, W. Va., is nearing completion. In this building also are to be housed the executive offices of the Medical Society of Virginia.

The building is located at the northeast corner of Twelfth and Clay, immediately opposite the Confederate Museum, and under the same roof with the new library of the Medical College of Virginia, with which it is con-

nected by a covered portico. Across the side street is McGuire Hall of the Medical College of Virginia, which will connect with the College library by an underground pass.

The structure is fireproof and consists of two stories and a basement. The cost is approximately $85,000. The basement has a large dining hall, kitchen and furnace room; on the first floor will be the offices to be used by the Medical Society of Virginia, the room for the Miller collection, and the lounge; and on the top floor will be the auditorium with a seating capacity of 200 and several rooms suitable for committee rooms or offices.

The building will be opened in time for the sessions of the Medical Society of Virginia in Richmond, November 1st, 2nd and 3rd.

Married.

Dr. William G. Stephenson, of the class of '30, Medical College of Virginia, and Miss Mamie Louise Barnes, both of Chattanooga, Tenn., on June 15th. Dr. Stephenson has been on the resident staff of the Baroness Erlanger Hospital, in Chattanooga, for the past two years and, effective July 1st, will be resident physician and surgeon.

Dr. Randolph L. Anderson, Richmond, Va., and Miss Ruth Grove, of Lewisburg, Pa., June 30th.

Dr. Charles Powell Cake, formerly of Norfolk, Va., but now of Detroit, Mich., and Miss Janette Osborn, of Lawrenceville, Va., May 28th. Dr. Cake graduated in medicine from the University of Virginia, in 1925, and is now connected with the Herman Kiefer Hospital, in Detroit.

University of Virginia, Department of Medicine, News.

On May 3rd, Dr. J. H. Neff spoke before the Southside Post-Graduate Society in Hopewell, Va., on the subject of Malignancy of the Genito-Urinary Tract.

Dr. J. C. Aub, Associate Professor of Medicine at the Harvard Medical School and Secretary of the Ella Sachs Plotz Fund, visited the Medical School on May 6th and 7th.

Dr. D. C. Wilson read a paper on Atypical Facial Neuralgia before the Section on Neuro-Psychiatry of the American Medical Association in New Orleans on May 11th. On June 9th he presented this subject at the meeting of the American Neurological Association in Atlantic City.

Dr. H. W. Wade, formerly chief pathologist to the Culion Leper Colony, P. I., at present Medical Director of the Leonard Wood Memorial Fund for the Study of Leprosy, visited the Medical School on May 8th.

Dr. E. P. Lehman represented Williams College at the Centennial Celebration Exercises of the University of Richmond on May 12th. On May 16th to 18th he attended the meetings of the American Surgical Society in New Haven, Conn.

At the meeting of the University of Virginia Medical Society on May 23rd Dr. H. E. Jordan spoke on Ovarian Gestation; Dr. J. E. Kindred gave a description of A Young Human Embryo; and Dr. C. L. Fifer gave an account of his studies of the Mammary Gland of the Rabbit.

On June 2nd, Dr. H. E. Jordan addressed the University of Virginia Medical Alumni Society in New York City.

On June 9th, Dr. C. C. Speidel presented an account of his studies on Living Nerves during Growth and Regeneration before the American Neurological Association in Atlantic City.

Dr. C. S. Lentz read a paper on Hospital Administration—Its Practical Application, before the Tri-State Hospital Convention, meeting in Richmond from May 17th to 19th.

Dr. Franklin G. Ebaugh, Professor of Psychiatry at the Medical School of the University of Colorado and Representative of the National Commission for Mental Hygiene, visited the Medical School on May 27th.

On June 14th, a class of forty-nine students was graduated with the degree of Doctor of Medicine. Six additional students were awarded the degree of Master of Science, one each in Surgery, Psychiatry, Physiology, Biochemistry, Pharmacology and Histology.

Major Edgar Erksine Hume, U. S. A., Inspector of Reverse Officers Training Camps, visited the Medical School on June 14th.

New Notes, Medical College of Virginia.

The Carnegie Corporation, New York City, has made an appropriation of $10,000.00 toward the maintenance of the library of the Medical College of Virginia, which will this summer be housed in a handsome new building.

Adjoining the new library of the college the Richmond Academy of Medicine has built its home and library. This will contain the famous Joseph L. Miller collection of rare first editions, engraving, silhouettes, medical curios, etc. The headquarters of the Medical Society of Virginia will also be located in the Academy of Medicine building.

The 1932 class of the Medical College of Virginia numbered 161. There were ninety-one graduates in medicine, twenty-eight in dentistry, twenty-six in pharmacy and sixteen in nursing. These represented twelve states, two foreign countries, and forty-three counties of Virginia.

The commencement exercises began Saturday night, May 28th, with a play, *Marrying Ann*, given by the dramatic club of the college. Sunday, May 29th, the commencement sermon was delivered at 8 P. M., by Dr. F. W. Burnham, of the Seventh Street Christian Church, his subject being *Unearned and Unpaid Increments*. The graduating exercises were held at the Mosque Theatre, Tuesday, May 31st. Dr. William D. Cutter, newly elected secretary of the council on medical education and hospitals, American Medical Association, gave the commencement address. The honorary degree of Doctor of Science was conferred upon Walter Drew McCaw, M. D., Brigadier-General, United States Army, retired, who is a distinguished alumnus of the class of 1882. Seventeen of the graduating class were awarded commissions in the reserve corps of the United States Army. Seven of the class in pharmacy received the degree of Bachelor of Science in pharmacy. For high scholarship twelve of the graduates in medicine were elected to membership in the Brown-Sequard Society; three in the dental graduating class were elected to membership in Omicron Kappa Upsilon, and five in the school of pharmacy were elected to membership in Rho Chi.

On May 27th-28th the annual post-graduate clinic of the college, in cooperation with the department of clinical education of the State Medical Society, was held with more than thirty physicians from various sections of the State in attendance. Both medical and surgical clinics were held with case demonstrations by Dr. I. A. Bigger and Dr. W. B. Porter. A symposium of fungus diseases was given by Dr. Frederick W. Shaw, Dr. Dean Cole, Dr. Powell Williams, Dr. E. H. Terrell and Dr. Thomas W. Murrell. A study of pellagra was conducted by Dr. J. H. Smith, Dr. W. B. Porter and Dr. F. J. Wampler. The obstetric clinic was under the direction of Dr. H. Hudnall Ware, Jr.

The second post-graduate clinic for Negro physicians was scheduled for June 20th-July 2nd. This is being held at the St. Philip Hospital, a unit of the hospital division of the college. This includes lectures, demonstrations of cases, assignment of cases for study in the wards of the St. Philip hospital, as well as in the out-patient department of the college. The course includes work in medicine, pediatrics, obstetrics, surgery, dermatology and clinical pathology.

Those who attended this clinic last year were so enthusiastic that a second clinic was planned and it is believed that those attending the clinic this year will find an even wider scope of work than that given in the course last year.

The student body of the college has presented the college a portrait of the late Eppa Hunton, Jr., who for many years was chairman of the Board of Visitors. The portrait was presented at the alumni dinner, May 30, 1932, by Dr. Stuart McGuire and accepted for the college by Dr. W. T. Sanger, president of the college.

Dr. Pauline Williams, associate professor of pathology, Medical College of Virginia, attended the biennial convention of Alpha Epsilon Iota Fraternity at Portland, Oregon, June 10th-12th. While in Portland Dr. Williams extended a cordial invitation to this fraternity to hold its next biennial convention in Richmond. This organization embraces a membership of 1,500 women physicians and women medical students, the chapters being established in twenty-two Class A medical schools throughout the country.

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Dr. Frank L. Apperly, of the department of pathology of the University of Melbourne, Australia, recently entered upon his work as professor of pathology and head of the department at the Medical College of Virginia. Dr. Apperly was a Rhodes scholar at Oxford where he took the B. A., M. A., and M. D., degrees. He had extended experience with the British Army during the World War. For a number of years he has been teaching pathology and doing research work in this field at the University of Melbourne.

News Notes from Duke University School of Medicine and Duke Hospital.

On June 8th, the eighteen members of the first graduating class of the Duke University School of Medicine received the degree of Doctor of Medicine. The degree of Bachelor of Science in Medicine was awarded to five students who had completed satisfactorily six quarters in the School of Medicine, had done creditable extra work in some one department and had written an acceptable thesis. In the School of Dietetics, two students who had completed successfully three and one-half years of college work and the required course of one year in the School of Dietetics received the degree of Bachelor of Science and the Certificate of Graduate Dietitian.

On the evening of June 8th, the graduating class planted ivy from Sir William Osler's home at Oxford, at the entrance to the medical school; at this ceremony Dr. William Sydney Thayer, of The Johns Hopkins Hospital, and a former pupil of Sir William Osler, made the address. Dr. Thayer also gave a clinic at the hospital on cardiac disease.

On June 9th, Dr. William D. Riley, of the United States Public Health Service, held a clinic at the hospital on Public Health Control of Syphilis.

At the commencement exercices, held at Wake Forest College June 6th, Dr. Wilburt C. Davison, Dean of the Duke University School of Medicine, received the honorary degree of Doctor of Science.

Student Nurses' Allowances.

Figures received through the American Nurses' Association show that student nurses in 78 per cent of nurses' training schools get a monthly allowance. An additional 10 per cent are paid an allowance but are charged tuition. Seven per cent neither get an allowance nor pay tuition, and 5 per cent pay tuition only.

Student allowances vary from the more common $10 a month to as high as $60 a month. The higher amounts are usually paid by mental hospitals, some of which frankly state that they pay student nurses the same salaries as they pay attendants.

Tuition charges run all the way from $5, which covers part of the cost of books, up to a very few schools that charge as much as $300.

Dr. Benjamin E. Hunt,

Who recently returned to Virginia after a year's residency in obstetrics at the Jersey City Hospital, Jersey City, N. J., has located in Newport News, Va., for the practice of obstetrics. He has offices in the Buxton Clinic Building and has recently been appointed staff obstetrician to the Elizabeth Buxton Hospital.

The American Psychiatric Association.

The eighty-eighth annual meeting of this Association, including its section on convulsive disorders, epilepsy, and allied maladies, was held in Philadelphia, May 30th, to June 3rd, inclusive. The general meeting was presided over by William L. Russell, M. D., president, of White Plains, New York, and the section on convulsive disorders was conducted under the chairmanship of D. S. Remier, M. D., of Skillman, New Jersey.

More than five hundred psychiatrists, neuropsychiatrists and mental hygienists from the United States and Canada were in attendance. From Virginia were registered in attendance: Dr. Paul V. Anderson, Westbrook Sanatorium, Richmond; Dr. J. H. Bell, Superintendent, Colony for the Feebleminded and Epileptic, Colony; Dr. G. W. Brown, Superintendent, Eastern State Hospital, Williamsburg; Dr. O. B. Darden, Westbrook Sanatorium, Richmond; Dr. William F. Drewry, Director, Bureau of Mental Hygiene, State Department of Public Welfare, Richmond; Dr. John R. Gill, Medical Staff, Central State Hospital, Petersburg; Dr. T. L. Gemmill, Medical Staff, Central State Hospital, Petersburg; Dr. James K. Hall, Westbrook, Sanatorium, Richmond; Dr. D. L. Howell, Jr., Medical Staff, Colony for the Feebleminded and Epileptic, Colony; Dr. A. H. Kiessling, Falls Church; Dr. James King, Saint Alban's Sanatorium, Radford; Dr. David C. Wilson, neurologist and psychiatrist, University of Virginia, University.

Each of the other Southern States also showed a considerable representation, chiefly of institutional psychiatrists.

The program embraced a wide range of addresses and papers, followed by much discussion, dealing with psychiatric and mental hygiene problems, many of which were of concern to the general medical profession as well as to neuro-psychiatrists and mental hygienists. An important feature of the printed program, which was mailed to every member in advance of the meeting, was an abstract of each paper, showing the line along which the author would develop his subject. This was quite informative. While to a considerable extent there were noticeable trends toward interest shown on the part of many of the papers and discussions of scientific psycho-analysis in its relation to human behavior, pro and con, and the like, much interest was shown in the general meetings and in the several round tables in early diagnosis, investigation, research and more modern treatment from the physical standpoint of mental disorders, a plea for more extended improved medical service in mental hospitals, further development of mental health or psychiatric clinics, out-patient work of mental hospitals and of general hospitals, especially for incipient mental cases, dealing with mental hygiene problems in universities and colleges, psychotherapeutics in training and custody in correctional and penal institutions, value of the work of psychologists and psychiatric social workers, psychiatry in relation to penology, value of organized mental hygiene clinics in connection with both juvenile and adult courts, probation and observation system for criminals with alleged mental disorder, etc. State-wide mental hygiene work and psychiatric clinics in relationship to mental hospitals and the medical profession were emphasized. In this connection the implication was that the success of psychiatry and mental hygiene, especially the prevention of mental disorder, depends upon an intelligent public opinion and co-operation in which the medical profession, especially psychiatrists, should act in the role of leadership.

In the development of a better understanding between psychiatry and the courts, the increasing value of the juvenile courts and the state mental hygiene clinic service, the workings, with satisfactory results, of the non-partisan psychiatric commission appointed by the court to investigate persons indicted for crime, observation of such cases in special departments at two of the State hospitals, the extended psychiatric service in connection with the penitentiary, etc., it was pointed out in a brief contribution to the program by the writer the progressive lines along which Virginia has been moving for several years in these phases of psychiatry.

The following officers were elected for the ensuing year: President, James V. May, M. D., of Boston; Vice-president, George H. Kirby, M. D., of New York City; Secretary-treasurer, Clarence O. Cheney, M. D., of New York (re-elected). Boston was selected for the next annual meeting—1933.

The Association has from its inception and organization in the forties exercised increasing influence in promoting psychiatry and especially the institutional care and treatment of the mentally sick. The *American Journal of Psychiatry*, under the auspices of the Association, fills a most important place in scientific medical journalism. The close relationship that has always existed between the Association and Virginia psychiatry is evidenced in part by the facts that among its originators and charter members were two of the State hospital medical superintendents, and in more recent years two other superintendents and psychiatrists were presidents, and that several annual meetings of the Society have been held in this State.

W. F. D.

Dr. James C. LeFon,

Who has just completed his internship at Protestant Hospital, Norfolk, Va., is locating for general practice at Dumbarton. Richmond, R. F. D., Va. He is an alumnus of the Medical College of Virginia in the class of '31.

Virginia Society of Oto-Laryngology and Ophthalmology.

The annual meeting of this society was held May 14th, at Virginia Beach, Va., under the presidency of Dr. Clarence Porter Jones, of Newport News. The following officers were elected for the ensuing year: President, Dr. Frank Smart, Norfolk; vice-president, Dr. Charles St. Clair, Bluefield, W. Va.; secretary-treasurer, Dr. H. Grant Preston, Harrisonburg (re-elected). The Executive Council is composed of Dr. H. B. Stone, Roanoke; Dr.

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Fletcher Woodward, University, and Dr. Clarence Porter Jones, Newport News.

Dr. William Burton was elected a new member, and Drs. John Dunn and William Olds were elected honorary members.

The next meeting will be held in Harrisonburg.

$125,000,000 Spent Annually on Healing Cults in United States.

Approximately $125,000,000 annually, equivalent to 12 per cent of the amount spent on the 142,000 doctors of medicine, is expended in the United States on 36,150 other practitioners who hold themselves out to treat the sick —osteopaths, chiropractors, naturopaths and allied healers, and Christian Science and New Thought practitioners—according to Louis S. Reed, Ph. D. in a report presented to the Committee on the Costs of Medical Care. He estimated that the people of the United States annually spend $42,000,000 for the services of the nation's 7,650 osteopaths; $63,000,000 on 16,000 chiropractors; $10,000,000 on 2,500 naturopaths and allied groups; and another $10,000,000 on the 10,000 Christian Science and New Thought healers.

A study of 7,800 representative families revealed that only fifty-two families considered healers in these cults as their family practitioners. Only 1.3 per cent of the families having medical care during the year used them exclusively, although 10 per cent resorted to healing cult practitioners at one time or another.

Addition to New York Polyclinic Medical School and Hospital.

The Marine Roof atop the new wing of the New York Polyclinic Medical School and Hospital was opened on Thursday, May 26th, at 3:00 P. M. The Honorable Grover A. Whalen, General Chairman, George Washington Bicentennial, New York City Commission, officiated. The ceremonies were attended by about three hundred people.

Dr. Joseph Bear,

Richmond, Va., announces that in the future his practice will be limited to obstetrics and diseases of women. His offices are at 301 East Franklin Street, this city.

Dr. Booker Lee,

Roanoke, Va., announces the removal of his office to 534 Shenandoah Life Building, that city, where he will continue his practice in diseases of the eye, ear, nose and throat.

One Hundred and Twenty-five Years of Service.

Early in June, the University of Maryland, Baltimore, celebrated the one hundred and twenty-fifth anniversary of its founding with interesting exercises, which included addresses by a number of prominent medical men. The University of Maryland has the fifth oldest medical school in the United States, this department having been established in December, 1807. In the course of its career, it has absorbed the Baltimore Medical College and the College of Physicians and Surgeons, both prominent schools in their time.

The South Carolina State Medical Association,

At its annual meeting this Spring, installed Dr. James R. Young, of Anderson, as president, and elected Dr. Robert E. Abell, Chester, as president-elect. Dr. Edgar A. Hines, Seneca, was re-elected secretary. Spartanburg was selected for the next place of meeting.

The Association of American Physicians,

Meeting at Atlantic City, in May, elected Dr. G. Canby Robinson, New York City, as president for the ensuing year, and re-elected Dr. James H. Means, Boston, as secretary. It was voted to held the next annual meeting in Washington, D. C., May 2-3, 1933.

Graduate Fortnight of the New York Academy of Medicine.

Tumors, benign and malignant, will be the theme of the 1932 Graduate Fortnight of The New York Academy of Medicine, to be held from October 17th to the 28th, inclusive. The medical profession of the country is invited to participate in the intensive two week study of this important medical and surgical subject.

There is no charge for attendance at any of the clinics or meetings, but registration is required for participation in the hospital demonstration clinics.

Concurrent with the Fortnight, and for an added week thereafter, there will be housed in the Academy building an exhibition of anatomical specimens numbering approximately 3,000 units. A number of the sections in the exhibition will be subjected to lecture demonstrations at regular intervals.

Ten evening meetings have been arranged during which tumor growths in various parts of the human anatomy will be discussed. Among the speakers are included Drs. W. Gordon M. Byers, Edwin Beer, Charles A.

Elsberg, James Ewing, Donald C. Balfour, Daniel F. Jones, Dean Lewis and Francis Carter Wood, and others.

Thirty afternoon clinical meetings and demonstrations have been arranged in eighteen of New York City's leading hospitals, including Bellevue, Lenox Hill, Presbyterian, St. Luke's, Fifth Avenue, Post-Graduate, Neurological Institute and others.

A complete program and registration blank for the clinics and demonstratons may be secured by addressing The New York Academy of Medicine, 2 East 103rd Street, New York City.

American Therapeutic Society.

At the thirty-third annual meeting of the Society, held in Baltimore, Md., on May 16th and 17th, the following officers were elected for the coming year: President, Dr. Frank Smithies, Chicago; vice-presidents, Dr. Julius Friedenwald, Baltimore; Dr. Alpheus F. Jennings, Detroit, and Dr. Grafton Tyler Brown, Washington, D. C.; secretary, Dr. Oscar B. Hunter, Washington, D. C.; and treasurer, Dr. Alphonse McMahon, St. Louis.

The Old Dominion Medical Society,

Composed of colored doctors in Virginia, held its annual meeting in Richmond, June 14th-16th, with an attendance of more than one hundred doctors. Dr. E. B. Harris, of Crewe, succeeded Dr. H. G. Chissell, of Alexandria, as president. Officers elected for the ensuing year are: President-elect, Dr. P. A. Scott, Newport News; vice-presidents, Drs. C. J. Waller, Staunton, and J. D. Williams, Manassas; secretary, Dr. J. H. Blackwell, Jr., Richmond, and treasurer, Dr. A. B. Green, Norfolk, both re-elected. It was decided to hold the 1933 sessions at Bay Shore Hotel, Buckroe Beach, Va.

The American Proctologic Society,

Which met in Memphis, Tenn., in May, elected Dr. Curtice Rosser, of Dallas, Texas, president. Dr. Rosser has, for several years, been secretary of this Society.

Dr. Thomas Hal Clarke, Jr.,

For some time at Thorpe, W. Va., is now located in Christiansburg, Va., where he is engaged in general practice. He is a member of the class of '25, University of Virginia, Department of Medicine.

Officers in Sons of Confederate Veterans.

At the recent meeting of General Turner Ashby Camp No. 218, Sons of Confederate Veterans, in Winchester, Va., Dr. George G. Snarr was chosen second lieutenant commander and Dr. Hunter H. McGuire surgeon of the Camp.

Dr. C. C. Cooley

Resigned his position with the U. S. Public Health Service, Marine Hospital, Ellis Island, N. Y., May 1st, to take up an internship in Eye, Ear, Nose and Throat work at the New York Post-Graduate Hospital, in New York City. Dr. Cooley is an alumnus of the University of Virginia, Department of Medicine, in the class of '29.

"The Southern Surgeon,"

Published in Atlanta, Ga., made its initial appearance in April, as a quarterly. While *The Southern Surgeon* will publish many papers by men who do not live in the South, it aims to provide surgeons of the South "with excellent papers, and it hopes particularly to enlist their interest by showing them what their neighbors are doing." It is to be the official publication of the Southeastern Surgical Congress and, in its first few issues, will present the unpublished papers read before that Congress at its 1931 Assembly, and then those of the 1932 session.

Dr. L. Minor Blackford, Atlanta, is editor and there is an Advisory Editorial Board of prominent surgeons from Baltimore to New Orleans. The management has great plans for the future of the journal.

We congratulate them upon their excellent beginning and extend our good wishes for the future.

Dr. Mercer Promoted in Medical Corps.

Brigadier-General S. Gardner Waller, Adjutant General of Virginia, has announced the appointment of Dr. Nelson Mercer, of Richmond, as Lieutenant-Colonel, Medical Corps, Virginia National Guard, and his assignment to the State Staff in the capacity of State Surgeon, effective May 27, 1932.

Dr. Mercer has served in the Virginia National Guard almost continuously since 1913. In 1924 he graduated at the Medical Field Service School, Carlisle Barracks, Pa., and was promoted to Lieutenant-Colonel, Medical Reserve, in 1926.

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Danville General Hospital.

Dr. John A. Hawkins has bought the hospital in Danville, Va., recently operated by Dr. Edmunds. This has been undergoing repairs and, it was expected, would be opened early in July, as the Danville General Hospital. There will be twenty to twenty-five beds and it will be a general hospital with an open staff. There will be no training school and the hospital will use only registered nurses.

The American Board for Ophthalmic Examinations

Will hold an examination in Montreal, Canada, on Monday, September 19th, at the time of the meeting of the American Academy of Ophthalmology and Oto-Laryngology.

Necessary applications for this examination can be procured from the Secretary, Dr. William H. Wilder, 122 South Michigan Avenue, Chicago, Ill., and should be sent to him at least sixty days before the date of examination.

Dr. Draper to Remain at Head of Health Work in Virginia.

In response to an inquiry made of him by a representative of the MONTHLY, Dr. Warren F. Draper stated that there was no foundation to the report recently circulated that he was soon to be recalled to Washington. The conditions under which he came to Virginia as State Health Commissioner are unchanged, and no consideration has been given by Surgeon-General Hugh S. Cumming to the question of his return.

Improvement in Eye Conditions.

The National Society for the Prevention of Blindness, in its report for 1931 states that in 1931 only 7.5 per cent of new admissions to schools for the blind were victims of babies' sore eyes, a decrease from 28 per cent in 1907. This cause of blindness, it points out, can be entirely eradicated by preventive treatment of the eyes of every new-born baby. It further states that during the year, twenty-two additional sight-saving classes were organized, bringing the total number in the United States to 398. These were in 114 cities in twenty-three different States.

Medical Society of the District of Columbia.

There was a total registration of 351 for the annual meeting of this Society in Washington, May 4th and 5th, and it was a most satisfactory meeting in every way. The following officers were elected: President, Dr. Harry A. Fowler; vice-president, Dr. Henry R. Schreiber and Dr. H. Gladys Kain; secretary-treasurer, Dr. Coursen B. Conklin (re-elected). All officers are of Washington.

U. S. Civil Service Examination.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examination for the position of Medical Technician (Bacteriology and Roentgenology). Applications must be on file with the Commission in Washington, not later than July 19, 1932.

The American Surgical Association,

At its annual meeting, recently held in New Haven, Conn., elected Dr. Arthur Dean Bevan, Chicago, as president for the coming year, and re-elected Dr. Vernon C. David, Chicago, secretary.

Dr. Robert F. Gillespie,

After practicing for a year at Switchback, W. Va., has returned to Virginia and is located at Lebanon, Va., for general practice. Dr. Gillespie is an alumnus of the Medical College of Virginia in the class of 1921.

Dr. Joseph B. Graham,

Of the University of Virginia, Department of Medicine, class of '28, for the past year resident surgeon at Memorial Hospital, Richmond, Va., has located in Talladega, Ala., where he will be engaged in general surgery.

Dr. Karl S. Blackwell,

Richmond, Va., has been elected president of the local Council of Social Agencies for 1932-33.

Drs. Greer Baughman and W. Brownley Foster, also of Richmond, are members of the executive committee of the Council.

Fresh Air Camp for Crippled Children.

A permanent summer camp for physically handicapped children is to be built on Pine Lake, Mich., by the W. K. Kellogg Foundation, according to the *Journal of the American Medical Association*. The plans include twenty-four cottages, which will accommodate 200 children for a period of eight or nine weeks each year. An administrative building, a small emergency hospital, and quarters for the staff will complete the plant. The staff will include physical therapists, counselors, a secretary, a quartermaster, and a dietitian.

Dr. Grant R. Elliott,

Of the class of '31, Medical College of Virginia, who completed his internship at the U. S. Marine Hospital, Norfolk, in June, is locating at Orange, Va., for general practice.

Dr. Emily Gardner,

Who recently located in Richmond, Va., has joined the medical staff of the Y. W. C. A., as an examiner.

Dr. Thomas C. Lawford,

Of the class of '29, University of Virginia, Department of Medicine, who later served an internship at the Elizabeth Buxton Hospital, Newport News, Va., is now located in Hilton Village, Va. He is Acting Health Officer and Coroner for Warwick County, during the illness of Dr. H. W. Curtis, who is under treatment at Southern Pines, N. C., for arterial hypertension.

Dr. Riggin to Succeed Dr. Grant.

Dr. I. C. Riggin has been appointed as director of county health work in Virginia to succeed Dr. H. G. Grant, and will enter upon his duties on August 1st. Dr. Grant recently resigned to accept the position of dean of the School of Medicine at Dalhousie University, Halifax, Nova Scotia, of which he is an alumnus, and left Virginia for his new work, the middle of June.

Dr. Riggin was formerly connected with the health work in Virginia and has had wide experience in this field. He returns to this State from New York where he has been executive director of the American Heart Association.

'Tis An Ill Wind That—

Now is the time for all good city officials to realize that the low price of real estate and the need to provide "made work" for the unemployed gives them a splendid opportunity to acquire and develop park and playground areas, a writer in the *American City* suggests. According to many park and city-planning authorities, an acre of open space is needed for every 100 inhabitants, and of this from 30 to 50 per cent should be devoted to active recreation uses.

For Sale—

Office furniture and instruments for use in general practice, account death. Address Mrs. L. F. James, 2318 Grove Avenue, Richmond, Va.—(*Adv.*)

Hourly Nursing Service.

The Private Duty Nurses' Club of Richmond, Va., announces the inauguration of an Hourly Nursing Service, in which its members are subject to call for service in all branches of the work that can be adequately performed in the home, at the following rates: $1.50 for the first hour or less, and 50 cents for each additional hour or fraction thereof.

The Club realizes that due to the present economic situation there is a pressing need for a service of this kind in Richmond, which has heretofore been furnished only by the I. V. N. A. The adoption of a similar movement will render a distinct service to the people who do not care for or cannot afford a full time nurse. It will also help to solve the unemployment situation among members of the Private Duty Nurses' Club.

For information, dial 3-1656. (*Adv.*)

An Ideal Place to Convalesce or Rest.

One block from ocean in pine grove. Special attention given to diets. Medical attention and professional nursing if required.

For particulars, apply to Mrs. Edwin M. Evans, Box No. 247, Virginia Beach, Va.—(*Adv.*)

Obituary Record

Dr. Charles Rollin Grandy,

Prominent and much beloved physician, and President of the Medical Society of Virginia in 1929-30, died at his home in Norfolk, June 10, 1932, after an illness of two years, of heart trouble—though he had been up and attending to part of the work in his great fight on tuberculosis until a few weeks prior to his death.

Dr. Grandy was born in Norfolk, April 9, 1871; and received his B. A. and M. D. degrees at the University of Virginia, graduating with high honors in 1892. He then served as interne eighteen months at Charity, and sixteen months at Hudson Street Hospitals, New York City. After this he went to Germany, and took up special pathological work for two years, in Freiburg, Frankfort and Berlin, returning to Norfolk and taking up the practice of internal and preventive medicine in 1898. He was soon *drafted*, so to speak, in the fight on tuberculosis, and has been devoting his life to this great problem ever since. He organized

the Anti-Tuberculosis League of Norfolk, and had been president of that organization for twenty-seven years. In recognition of this public service, the City of Norfolk dedicated the "Charles R. Grandy Sanitarium" to his honor a few months ago.

Dr. Grandy was not only prominent in local but also in State and National affairs, contributing many valuable papers and discussions. He was President of the Norfolk County Medical Society, 1900-1901; member of the Seaboard Medical Association, The American Medical Association, The American Public Health Association, American Child Health Association, National Tuberculosis Association, Fellow of The American College of Physicians, and served on many committees, and as councilor, before becoming president of the Medical Society of Virginia, in October, 1929. He was a member of the Norfolk School Board for thirteen years, and its chairman for twelve years. He was active in church work and had served as vestryman in Christ Church, and was also active in many business organizations of Norfolk. His wife, a son and daughter by a former marriage, survive him.

P. St. L. M.

Dr. Thomas Jackson Sims,

Prominent physician of Newport News, Va., died June 9th, following a nine months' illness with cancer. He was sixty-nine years of age and graduated from the Medical College of Virginia in 1897. Dr. Sims had practiced in Newport News for thirty-five years, and had been a member of the Medical Society of Virginia for thirty years.

Dr. William Thomas Warriner,

Crewe, Va., died June 5th, at the home of his daughter, in Richmond, Va. He was a native of Amelia County, Va., and eighty-eight years of age. Dr. Warriner graduated from the College of Physicians and Surgeons, Baltimore, in 1872. He served for some time in the Confederate Army and had practiced in Crewe for forty years. Dr. Warriner had been a member of the Medical Society of Virginia for thirty-eight years. He is survived by a daughter and two sons, Dr. W. R. Warriner, Crewe, and Dr. B. B. Warriner, of the U. S. Army.

Dr. George Bonaparte Wood, Sr.,

Well-known physician of Emporia, Va., died June 9th. He was a native of Northampton Co., N. C., and was seventy-four years of age. Dr. Wood graduated from the College of Physicians and Surgeons, Baltimore, in 1889. He was formerly a member of the Medical Society of Virginia. His wife and five children survive him. Two of his sons are Drs. G. B. Wood, Jr., and A. H. Wood, both of Emporia.

Dr. William Williams Keen,

Noted surgeon of Philadelphia, died June 7th, after an illness of several months. He was ninety-five years of age and a graduate of the Jefferson Medical College of Philadelphia, in 1862. Dr. Keen was a former president of the American Surgical Association, the American Medical Association, and other national medical organizations. He served his country in three wars and won decorations from France and Belgium for his services in the World War. Dr. Keen is survived by four daughters, one of whom is Mrs. Walter Jackson Freeman, president of the Auxiliary to the American Medical Association.

Dr. Leonard A. Slater

Died at his home in Richmond, Va., May 19th. He was a former resident of New Kent County, Va., and was sixty-three years of age. Dr. Slater graduated from the University of Maryland, School of Medicine, in 1891. His wife and four daughters survive him.

Dr. Leland Osgood Mauldin,

Greenville, S. C., died May 6th of heart disease following influenza. He was fifty-three years of age and a graduate of the Medical College of the State of South Carolina in 1903. Dr. Mauldin was a past president of the South Carolina Medical Association and was on the staff of the Greenville City Hospital.

Dr. Albert Montgomery Dupuy McCormick,

Medical Director, Rear Admiral, U. S. Navy, retired, died, April 20th, of coronary thrombosis. He was sixty-six years of age and a graduate of the University of Maryland, School of Medicine, in 1888. Dr. McCormick made his home in Berryville, Va.

Dr. William McSpadden Copenhaver,

Helena, Montana, was drowned recently. He was fifty-six years of age and a graduate of the University College of Medicine, Richmond, Va., in 1900. Dr. Copenhaver specialized in diseases of the eye, ear, nose, and throat.